The Builder.

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Some Last Notes at the Paris Exhibition.

THOSE who have seen much of the great Exhibition at Paris, the doors of which are now formally closed (though still informally open), will not regard without a certain feeling of melancholy the demolition and dispersion of that extraordinary collection of the products of human intellect and labour in so many departments of work, which has rendered the "capital of pleasure" (as Matthew Arnold called Paris) during this year the centre of interest of the civilised world. Nowhere else could such an exhibition have been held, for nowhere else could there be found at present the combination of energy with artistic genius and ardour which has made of the Paris Exhibition (in spite of the Eiffel Tower) a kind of artistic creation on a grand scale. We hear that the Germans are fired with the ambition to produce a similar exhibition at their capital. The energy, the wealth, and the mechanical skill they possess undoubtedly in an equal degree with the French; but where will they find the artistic genius which gave such vivid interest, even allowing for some sins against good taste, to the Paris Exhibition? They will be wise at least not to attempt to challenge direct comparison with France by any immediate effort to rival her great national spectacle.

The following notes on some of the practical exhibits connected with building industries were made before the close of the Exhibition, though circumstances have compelled the postponement of their publication till the present week. It will not be out of place however to put them on record now, as a brief *résumé* of what was to be seen in the contributions of various countries in this class of exhibited work, the rather as we may be able to give credit to some things which appear to have escaped the official recognition which they merited. One reason for this may have been the uncanny kind of places to which exhibits of building materials were too much relegated. A fair variety of building materials were ranged along an arcade at the back of the British Section, but these were mostly Belgian, and a large proportion of the British exhibits of this kind were located very much out of the way in a corner of the gallery of the Machinery Hall. The wares of the Imperial Stone Company included silicated stone pipes, petro-silicon paving, and some drain-pipes to illustrate Archer's patent joint, which we have before described and illustrated. This claims, and is supported by good testimony, to be a perfectly water-tight joint. Doubtless it is a good joint, but we apprehend that to complete it under water with the liquid cement, in which lies the essence of its perfection, requires very careful manipulation.

Mousset and Thibaut, of Bouffioulx, Belgium, exhibited some well-glazed pipes, and obtained a silver medal for them and for some very large earthenware crocks; and the Société des Terres Plastiques of Andenne, Belgium, made a good show with their very large stoneware flues, good tiles, slabs, and oven bricks. We may also mention the excellent paving squares in buff and black by T. Pire, of Marchienne au Pont, which were overlooked by the jury. A gold medal in these wares went to Monsere & Co., for excellent glazed stoneware pipes. They exhibited a broken 6-in. pipe which had resisted an internal pressure of 1,200 kilogrammes before bursting.

The Société Anonyme (or Joint Stock Company) of Seilles les Andenne, and of Bouffioulx, had a grand collection of refractory products of all kinds and sizes up to pipes 4 ft. 6 in. in diameter, and flues 13 ft. long and 2 ft. 6 in. across the face, and have received a gold medal, which has also been awarded to L. Escoyez, of Tertre (Hainault), for sharp, solidly-burned work of a similar character, and for encaustic floor tiles (5 in.) in stone colour and grey alternated, and in buff and light brown alternated. This firm also exhibited samples of the clays used in their manufactures.

In a pavilion opposite to this arcade was to be seen a great exhibition of terra-cotta goods from Belgium, amongst which gold and silver medals had been distributed without stint; tiles from the Mechanical Tileworks of Leforêt near Douai, in the Department of Pas de Calais, and glazed bricks and ridges of many patterns; but, so far as glazed bricks go, none of the foreign exhibits were equal to those shown by Brookes & Son, of Huddersfield, who exhibited quite perfect white and coloured glazed bricks in the gallery of the Machinery Hall, but they were not even noticed by the jury.

In the stand of Passavant Iselin, of Bâle, in the Haute-Saône, were exhibited thick glass tiles cast to pattern to match moulded tiles, and corresponding exactly in size. It should be noticed that tiles of the kinds in common use in England are almost unknown on the Continent, a large, flat tile of uniform thickness, but with generally some ornamental pattern on it, being the system in favour in France. The weight of these tiles per square is greater than ours (average 8 cwt. per square), but the work of tiling is more quickly done; the individual weight of each tile is of advantage in a high wind, and there are fewer breakages and bills for "repairing tiling." We, in some respects, prefer their appearance on a roof to our own. The glazed terra-cotta and majolica squares of Parvillée Brothers, of Paris, are most excellent, especially in those of turquoise colour, and deservedly received a gold medal. Amongst others in this pavilion were Sazerac & Co., of Rochefoucauld (Charente), whose best exhibit were black tiles and stamped black bricks (silver medal), and Polakowski & Co., of Roumazieres, the colour of whose terra-cotta goods was very uniform; but the best terra-cotta work in the whole exhibition was that of Oustan & Co., of Tarbes, Hautes-Pyrénées.

In the Machinery Hall there were exhibitions of Scotch refractory goods by the Glenboig Union Fire-clay Company, of Glenboig, near Coatbridge, which have most deservedly received recognition, though the medal is but silver. The accurate and clean moulding of these peculiarly-speckled bricks places them quite beyond anything else of the kind exhibited. J. Hamblet, of West Bromwich, has also received a silver medal for majolica tiles and vitrified bricks, and mosaic and encaustic goods; and the Vulcan Firebrick Company, a bronze medal for firebricks of no particular merit.

We may take it, on the whole, that, irrespective of the cost of carriage, we, on this side of the Channel, have not much competition to contend with in the above-named classes of goods. There is no lack of good material in most parts of Great Britain, and no lack of skill to use it. Still, we write for all classes of persons, and, for those who wish to enquire about prices and compare them with those of their neighbours, the opportunity is now offered for them to do so. Contractors, in the keen competition for work, have to look on the whole world as a hunting-ground for materials and labour. There was a good show of machines for turning out bricks,—ordinary, perforated, tubular, &c.,—and tiles of all patterns.

Amongst the successful exhibitors were Gregg & Co., of Philadelphia, for moulded bricks; Joly & Foucart, of Blois, Loir-et-Cher; Boulet & Co., of Paris; and E. M. Delahaye, of Tours, the last three having each received gold medals. Judged by the tiles produced by Joly & Foucart, we should consider their machines to be probably the best exhibited. Without reproducing the drawings of these machines in our pages, which we do not consider to be necessary at present, or entering into elaborate descriptions, for which we have not space, it is not easy to convey to our readers any impression that would be of value, and we therefore confine ourselves to quoting the weights, prices, and capabilities of some of the various machines:—

Joly & Foucart's Brick and Tile-making Machines.

No. 1.—Pressing-machine, with "chariot" cutter; 8 to 10 h.p.; 1,500 to 2,000 bricks per hour; weight, about 2½ tons. Price, 90*l.*

No. 2.—Ditto, with a cutter, but on a brick base; 6 h.p.; 400 to 1,000 bricks per hour; weight, about 27 cwt. Price, 68*l.*

No. 2A.—Ditto. ditto, on an iron stand; weight, 29 cwt. Price, 72*l.*

No. 3.—Ditto, with its cutter; 300 to 800 bricks per hour; 4 h.p.; weight, 22 cwt. Price, 54*l.*

No. 3A.—Ditto, ditto, in parts; weighing each not over about 35 lb. Price, 58*l.*

No. 4.—Machine for pressing light and homogeneous earths by hand; 150 to 800 bricks per hour; weight, about 1 ton. Price, 48*l.*

No. 5.—Cutter for bent tiles; 1,500 to 1,800 tiles per hour. Price, 20*l.*

No. 6.—Pounding cylinders, with hopper and gear; weight, about 27 cwt. Price, 52*l.*

No. 7.—Mixer; requires 5 or 6 h.p. to supply clay for about 2,000 bricks per hour; weight, about 2 tons. Price, 66*l.*

No. 8.—Another mixer, to do a similar quantity of work; weight, 2½ tons. Price, 88*l.* To be fixed on a brick base.

No. 9.—Mechanical press, No. 1; triple pressure of about 30 tons; capable of turning out 200 to 300 articles per hour with two men; weight, 35 cwt. Price, 88*l.*

No. 10.—Mechanical Press, No. 2. Pressure and production the same as last; weight, 22 cwt. Price, 72*l.*

No. 11.—Lever Press. Pressure about 7 tons, actuated by a sudden shock by one man, giving a result of 4 to 500 articles per hour; weight, half a ton. Price, 24*l.*

No. 12.—Machine for Pressing Vertically. Weight, 3 tons. Price, 120*l.* Capacities not stated.

Horse-gear for working Machine No. 3 with one or two horses; weight, 12 cwt. Price, 20*l.*

Ditto, for No. 2 machine, with one or two horses; weight, 18 cwt. Price, 24*l.*

Ditto, for four horses; weight, 21 cwt. Price, 25*l.*

It will be easy for any one who desires it to compare these data with those of our English machines.

The two English cement firms named Francis both exhibited; but whilst C. Francis, Son, & Co., of Newport, have received a silver medal, Francis & Co., of Vauxhall, have not been patronised by the jury. Their (C. Francis, Son, & Co.'s) plaques of Parian cement were better than those in Portland cement, and their slabs of Scagliola were good. Each of these firms exhibited barrels of Portland cement, both being, no doubt, excellent; but the proof of the pudding is in the eating, and to no other material does the old saw apply probably with greater appropriateness than to cement. We are not aware what means the jury took to test these cements other than by the eye.

Our old friend, M. Coignet, the father of concrete in France, had a little kiosk in the middle of the grounds, containing every possible variety, coloured and uncoloured, in mosaic, in imitation granite, and so on, the variety which the schoolboy would recognise as "hardbake" being pleasing when close to it, but disappointing, if not distinctly offensive, at a little distance.

Mr. Skelsey, of Hull, exhibited his "Adamant" Portland cement, but without result; and there were several imitation marbles in stucco, more or less displeasing, the best of which were by Corbineau, of Nantes, who styles himself a "stucateur."

Good stalls of hydraulic limes, Portland cements, and clays were exhibited by Deschamps and Faut, of Des Moulineaux, Issy-Seine (system Vicat); by Poliet, Baillot, and Ville-vielle (silver medal), of Beffes (Cher); and also by Sollier and Co., of Boulogne.

A silver medal is awarded to A. Dubousset, of Beauvoir Allier, for samples of Kaolin, showing the gradations of disintegration from grey granite to pure, natural Kaolin, and showing white, grey, rose, yellow, and red varieties.

Messrs. Ponton, of Deptford, exhibited their petramite, which is stated by them to "be a mixture of sand and pulverised silica, which changes into a new crystallised state of silica, and, being entirely free from silicates, is unalterable by intense heat or boiling acids, and is superior to the finest statuary marble." Both white and grey varieties were exhibited. We regret that we cannot concur with the manufacturers in the comparison which they institute between petramite and statuary marble. The white is unquestionably a good white, but its resemblance to good marble is not sufficient to deceive anyone at all conversant with that substance. The price quoted is 3s. 6d. per cubic foot.

In the French Section two model kiosks were erected of a material called Blanc Minéral du Barry, and exhibited by Baumann & Co., of Bougival (Seine-et-Oise). This is a composition of chalk, pulverised, and subsequently mixed with some cementing material, tinted if desired, and moulded into any shape or for any purpose, such as for models. It is difficult to recognise any special value attaching to it, and the jury have apparently formed the same opinion.

Among examples of natural stones not well known here, may be mentioned the three different kinds that were exhibited by M. G. Biron, of Paris, two of which are good,—namely, a beautiful hard white limestone of the character of our Hopton Wood stone, but rather whiter, and taking a fair polish; the other being still harder, and taking a good polish, light drab in colour, with light-brown fossils. They come from quarries at L'Echaillon par Voreppe (Isère).

M. Le Blanc, of Paris, had a magnificently-executed chimney-piece, of 13 ft. total width and 19 ft. in height, with three carved figures in Conflans stone, enshrined in an arcade of three bays. The body of the work,—in fact, every part except the figures and the bases of the lower pilasters,—is in St. Maximim stone, from quarries on the Oise, a variety of limestone similar, but apparently inferior in character, to Caen. This firm also exhibits samples of the stone from the different beds of their quarries,—a plan which might often be followed with advantage to the public.

1.—St. Maximum (Oise) has six beds—Roche, Fine Roche, Roche (moyée), Demi Roche, Banc Royal, and Vergelé.
2.—Conflans (Seine-et-Oise) one bed only.
3.—Vitry (Seine) Roche, Banc d'Argent, and Demi Roche.
4.—La Jeunesse Buceyles Gy (Haute Saône).

The latter (4) are hard fossiliferous limestones of grey, buff, and pink shades, and, as usual, take a fine polish. A fine example of them is exhibited in a balustrade, each kind being utilised for the various parts.

The Belgians (Union des Maîtres de Carrières Belgique) erected for their offices a building of ordinary white limestone, faced with the dark-grey limestone styled by them "Petit Granit," from Soignies, and exhibiting the differences in shade produced on the same stone by the various descriptions of work. In this stone the polished panels are black, the picked worked dark-grey, the fine-tooled light grey. The effect was not very happy, there being a coldness and slaty appearance about it somewhat repelling.

The steps of the machinery-hall had been executed in a compact white limestone, slightly tinged with pink, from M. Javelle, of Belvove (Jura), and notwithstanding the extraordinary wear to which they have been subjected, seem now as good as new; but, so far as that goes, many of the concrete steps in the gardens which had been subjected to as much, if not more, wear than those in the machinery-hall, had also done their work most creditably.

The finest display of marble in the Exhibition was that of M. Contini, of Marseilles, very choice examples of Jaune de Marseilles, Rose Tunisie, Porphyre d'Egypte, Rouge d'Afrique, Syenite d'Egypte, Onyx d'Algerie, Vert Antique, and Vert de Mer, Agate Pyrennien, Bleu Turkien, Jasper Egypte, Breche Violette, Sicilien (of more than one variety), and the rare and expensive Cipola Rose. These are grouped round one of those horrible statues which we occasionally encounter, in several kinds of coloured marbles, the hair of one colour, the drapery of another, the eyes of another, &c.; works which offend every sense of appropriateness and of the fitness of things, and are a desecration of the most beautiful material. Messrs. Farmer & Brindley, of Westminster, had a considerable show, comprising examples of both English and Oriental alabaster, Aventurine, Egyptian porphyry, Espagnol, Huelva, Breche Orange, Frosterley, Labradorite (green), and Thulite, a rose pink spotted with white, and not particularly pleasing, though of a rare shade. They had also twelve slabs of Devonshire marble, but no indication of the localities from which they were derived. None of them were particularly striking, except one fine dark grey, which seemed to be a variety of the Petworth, and one other similar to Huelva (a mixture of chocolate, slate, and white).

With the exception of the alabaster and the Frosterley (of Durham), the exhibition of these English marbles was a somewhat severe commentary on the remark said to have been made recently by one of the British workmen's delegates to Paris, to the effect that architects should specify that no marbles other than those of England and Connemara (which, by the by, is a serpentine) should be used in our houses. This sort of clap-trap patriotism (?) is utterly ridiculous, and it would be as sensible to say that we must put up with bad flour or English tobacco, or that we should cover our roads with dirt instead of hard stones, in order to make more work for local labourers.

The French marbles of the Vallée d'Ossau, in the Basse Pyrénées, in which Eaux Bonnes is situated, were well illustrated, together with a map shewing the positions of the twelve quarries belonging to the Company, as follows:—On the left bank of the river (as you ascend), Arndy, Izeste (Sonders), Izeste (Brousset), Bar, Cipolin, Pan, Miegebat (Carmine), Miegebat (Noir); on the right bank of the river, Louvie (Plon), Louvie (Soubiron), Fabreges, and Soques. The Bar quarry is one of granite,—singularly white, shaded with light grey. The marbles generally are of a beautiful grey, both veined and shelly, and veined with white and purple. There are no greens or yellows. The Company also exhibits fine slate from Laruns and Gerebelesten, in the same valley.

Holtzer & Co., of Paris, exhibited Villefranche Violet, a pleasing mixture of violet and purple streaked with white; two varieties of Griotte, a deep red or chocolate either veined or flecked with white, for which we did not much care; and three varieties of Escalet, viz., Moucheté and Moucheté Campan, combinations of light and dark slate, chocolate, pink, and white, and Jaune, a curious yellow mottled with chocolate. One block of Griotte veinée was 17 ft. long and about 3 ft. square.

The Société Anonymé de Merbes-le-Château of Belgium displayed a series of fine slabs, each about 12 ft. long and 6 ft. wide, of the following:—

Granit (Poulseur), a black shelly limestone with white fossils.
Blanc Puissant (Massa), pure white.
Rouge Fleuri (Santour), dark chocolate streaked with white, and blotched with black-edged white fossils.
St. Anne (La Buissière), dark slate, streaked and speckled with white.
Rouge Griotte (Vodelée), light chocolate, well streaked and blotched with white.
Noir Fin (Golzinne), pure black.
Rouge Royal (Vodelée), similar to Rouge Griotte but a paler chocolate.
Florence (Profondeville), grey slate colour blotched with black.

Rouge Griotte (Bergnoury), rich chocolate, blotched with grey and streaked with white.
Blanc Clair (Carrara), white, streaked with grey.
St. Anne Francais (Sobre St. Géry), dark slate, rather less streaked with white than the St. Anne of La Buissière.

Several of these dark marbles, and especially the Florence, were strikingly handsome. A beautiful black slab and a square platform of variegated Belgian marbles were also exhibited by Duboy. Gros Jean & Son, of Isnes les Golzines, and a remarkably beautiful marble, the matrix a brown pink flecked with chocolate, embedding blocks of black and grey streaked with white, was exhibited both by E. Decroliere and Leon Boucneau, the quarries being at Montigny-le-Tilleul, Belgium.

Taking a general view of the above-mentioned classes of exhibits, we may fairly conclude that we cannot dispense with foreign marbles, and that we can get them both good and cheap from France and Belgium; but that we can get on well enough without foreign stones, except, perhaps, that from Caen, and possibly that from Conflans. It is less easy to get the latter than the former, and of no especial advantage, for their character is similar; but for fine work there is nothing yet discovered in England at all equal to that from Caen, and for general building in this class of stone, it is a popular error to assume that the good qualities of Caen have not the durability of our Bath and other similar stones. That which will last in the country in France will last in the country in England, either for interiors or exteriors, but we must have the best, *i.e.*, the stone from the Allemagne and not from the Maladrerie quarries.

Machinery for working on stone or marble was extremely scarce, but two sawing-machines were exhibited of novel character. One of them, of which a model only was exhibited, is an American invention, the diamond having been requisitioned to help in the work. Small diamonds are set at intervals along the lower edge of a very deep blade set in a frame which oscillates from a central overhead pivot, one end of the frame being attached to an arm actuated in the usual manner. It is not known what are the capabilities or the registered performances of this machine, but it is stated to have had a great success in the United States, and that its success in France would be indubitable. It is described as the "Systém Jackson." It appears to us that the system is inferior in several respects to that commonly used in England for sawing stone and marble without diamonds.

The other machine is altogether of a different character, and is, we believe, essentially different, both in principle and in method, to any other stone machine yet introduced to notice. It is the invention, or, at all events, brought out and manufactured by M. Gérard, a mechanical engineer of Paris. The reader would have some difficulty in understanding the details of a structure of this kind unless he had the opportunity of studying an illustration, but we may say that the principle is that of the continuous band saw applied horizontally. The saw (in the machine exhibited) is of steel passing round a pair of drums, to which rotation is given by a sliding spindle passing through one of the drums and geared to a horizontal spindle in the upper part of the frame of the machine, worked as usual by a belt from the engine. The drums are each attached to a frame connected with a pair of collars, which work vertically on four strong hollow cylinders placed one at each angle of the bed-frame. On this frame are cross rails to carry a truck, with a revolving platform for carrying the stone to be sawn. The saw is guided on each side by friction rollers, and passes on each side through a box, which can be fed from above with sand and water. These collars, with the drums and saw attached to them, can be lowered automatically by means of sliding collars working on long screws in the hollow cylinders. The saw consequently makes two cuts with each revolution, either on two stones or on one as may be desired. The speed of lowering the frame is regulated by the nature of the stone to be sawn; the speed of the saw was stated to be from 450 to 500 métres per minute, which would give about thirty revolutions.

The length of stone which could be placed under the saw in the machine exhibited was about 11 ft., or 22 ft. in all.

The advantages claimed by the inventor are

1. Great speed in sawing; and he gives the following as the depth of stone which can be sawn per hour:—

From 10 ft. to 16 ft. in soft stones.
„ 10 in. to 12 in. in hard stones.
„ 4 in. to 6 in. in different marbles and hard stones.
„ 4 in. to 5 in. in Belgian and similar granites.
About 1 in. in Brittany, Normandy, Scotch, or Italian granites of extraordinary hardness, which have hitherto always had to be worked by hand.

2. A perfectly-sawn surface, well dressed and almost polished, contrary to that which is produced by means of other stone-sawing machines. In addition to this, the appearance is regular, and the stops sharp, without flaws. By this means all the operations usually attending ordinary sawing, which are often long and costly, can be dispensed with.

3. Great economy in motive force and hand-work.

It is stated that the machine exhibited could be worked with a 4-horse-power engine, and that one man was sufficient to look after two machines, and the inventor claims a saving of 40 per cent. advantage in effective work over any other stone-sawing machine.

The thickness or depth of stone which could be placed under the saw in this machine was about 9 ft. Its price was £560.

M. Gérard is constructing a still larger machine, of a similar kind, for the Town Council of Marseilles, which will take stones about 16 ft. long, the price of which will be £720. The weight of the machine exhibited is 17 tons.

We have described this machine at some length, because we have seen that what M. Gerard claims to do he can, at all events, in a great measure, perform. The work done by this steel saw on hard granite and marble is in every way superior to anything previously seen, and the extreme thinness of the slabs that can be sliced off by it is very extraordinary. No particular difficulty is experienced in producing sheets, or we should rather style them veneers, of granite and marble one-tenth of an inch in thickness,—a slab was exhibited in a wooden frame very much thinner than the above-mentioned,—and quite ready for the polisher. The machine is in its infancy, and consequently it is not possible to obtain reports concerning its capabilities under long trial, but M. Gérard is proposing to make it in several sizes, and to have one fitted up for inspection in motion at his manufactory in Paris (3, Place Daumesnil) in about a month's time. It is possible that this invention may economise the cost of marble for certain purposes to such an extent as to create a great impetus in the trade in inlaid marbles or marble mosaics, and in the decoration of walls internally, and possibly externally also, with very thin, inexpensive slabs of granite, marble, or other hard ornamental stone.

A variety of stone of a very useful nature, viz., lithographing stones, were exhibited by Joyeux, Hammond, & Cie., of Chateauneuf-sur-Cher, and also by F. Dupins, Givry (Saône et Loire), from the quarries at Clos Gateau, Burgundy. The prices seemed moderate, and the quality of the stones in each case very fine. In point of size, they were much eclipsed by a remarkable stone exhibited by G. Kammera, of Paris, from the quarries of Vigan (Gard), 5 ft. wide, 7 ft. 10 in. in length, and 4½ in. thick, of uniform colour and texture throughout. The price was not stated.

Architects and builders are frequently interested in obtaining good and reasonably cheap lithographed work, and the French and American lithographers gave some excellent examples of page ornament, vignettes, etiquettes, passepartouts, corners, title pages, &c. A Grand Prix was given for this class of work to Debernay & Co., of Paris, and to Beaudoire & Co., of Trouin, but their work did not appear to be better than, if as good as, that of Mackellar, Smith, Jordan, & Co., of Philadelphia, who received a gold medal, as also Ch. Derriez, of Paris. Beautiful work was also shown by Bonnet & Cie., and A. Turlot, both of Paris.

A considerable exhibit of slates from Nantes enabled us to institute comparisons between them and some of our own, very much to the disadvantage of Nantes. Those from Pen-yr-Orsedd, Nantlle, North Wales, in green and blue (alternated) roofing slates were much superior to Nantes, but received no mention, which is, perhaps, not surprising, as they formed a poor little show compared to the fine exhibit of all sizes of slates from the Oakley Slate Quarries Co., who received two gold medals.

Perhaps there is nothing in which the cost of building is more economised than by the use of the best machinery for converting timber for all manner of uses, and there was enough in the Exhibition to satisfy the curiosity of any one. The chief feature, perhaps, was the variety of endless band-saws which were being utilised to advantage towards the close in turning out thousands of puzzle toys, Eiffel towers, sofas, &c., which sold readily. Amongst others were those of Fay, of Cincinnati, U.S.A., who had a most extensive assortment of machines, and received a Grand Prize, but, in our opinion they were somewhat light generally for thoroughly satisfactory results over a period of time, and we preferred, on the whole, the exhibit of Messrs. Robinson (Railway Works, Rochdale), who received a Grand Prix for a planing and thicknessing machine, which could be also utilised (by rapid changing) for rebating and chamfering; to it was attached a very ingenious graduated scale with vernier, for regulating with extreme exactness the thickness of each piece of wood worked by the machine. Messrs. Robinson had also a graduated stroke morticing and boring machine, so arranged as to save much wear and tear in the shafts which hold the tools, and for this they also received a Gold Medal.

M. Gérard (previously mentioned), of Paris, exhibited an excellent endless band-saw, with differential pullies, and arranged either for hand or foot working. It is made entirely of metal, and is solid and portable. The upper pulley (for the saw) was 16 in. in diameter, and the lower pulley 32 in. ditto. There was no jerking when worked with the pedal, and no doubt very accurate work could be turned out with it.

A remarkable shaping-machine was exhibited by Guillet et Fils, of Auxerre (Yonne). Two carved heads in high relief were shown by them as triumphs of machine-work, and a great deal of time must have been saved in the production of these heads in the state in which we saw them—that is to say, in the rough,—for the machine tools had produced nothing that could be termed finish; but such a machine could never be of any use even for roughing out sculptor's work, as it could not possibly take account of the innumerable variations in contour required.

Parquet flooring is a fitting successor to wood-working machines, and, amongst many others, those of P. Gil à Domene (Isere) and of Maison Camps & Co., of Annemasse (Haute Savoie), each of whom received silver medals, were most worthy of notice. The coloured illustrations of various patterns in the specimen book shown by the latter firm were most artistically prepared.

Parquetry was very abundant and most beautifully executed in several of the buildings in the grounds, and especially in the bold external panels of the Nicaragua pavilion.

MM. A. Cauchot, of Paris, exhibited veneers of all kinds, and in strips up to 11 ft. in length, their specialty being walnut. This, however, has more to do with the furniture-maker than the ordinary joiner, so we may pass on to record a clever contrivance of M. O. André, of Paris (whose works are at Neuilly) for securing wood framing by short bolts and nuts passing diagonally through the angles of junction of the several pieces of

Amongst the successful exhibitors were Gregg & Co., of Philadelphia, for moulded bricks; Joly & Foucart, of Blois, Loir-et-Cher; Boulet & Co., of Paris; and E. M. Delahaye, of Tours, the last three having each received gold medals. Judged by the tiles produced by Joly & Foucart, we should consider their machines to be probably the best exhibited. Without reproducing the drawings of these machines in our pages, which we do not consider to be necessary at present, or entering into elaborate descriptions, for which we have not space, it is not easy to convey to our readers any impression that would be of value, and we therefore confine ourselves to quoting the weights, prices, and capabilities of some of the various machines:—

Joly & Foucart's Brick and Tile-making Machines.

No. 1.—Pressing-machine, with "chariot" cutter; 8 to 10 h.p.; 1,500 to 2,000 bricks per hour; weight, about 2¼ tons. Price, 90*l.*

No. 2.—Ditto, with a cutter, but on a brick base; 6 h.p.; 400 to 1,000 bricks per hour; weight, about 27 cwt. Price, 68*l.*

No. 2A.—Ditto, ditto, on an iron stand; weight, 29 cwt. Price, 72*l.*

No. 3.—Ditto, with its cutter; 300 to 800 bricks per hour; 4 h.p.; weight, 22 cwt. Price, 54*l.*

No. 3A.—Ditto, ditto, in parts; weighing each not over about 35 lb. Price, 58*l.*

No. 4.—Machine for pressing light and homogeneous earths by hand; 150 to 800 bricks per hour; weight, about 1 ton. Price, 48*l.*

No. 5.—Cutter for bent tiles; 1,500 to 1,800 tiles per hour. Price, 20*l.*

No. 6.—Pounding cylinders, with hopper and gear; weight, about 27 cwt. Price, 52*l.*

No. 7.—Mixer; requires 5 or 6 h.p. to supply clay for about 2,000 bricks per hour; weight, about 2 tons. Price, 66*l.*

No. 8.—Another mixer, to do a similar quantity of work; weight, 2½ tons. Price, 88*l.* To be fixed on a brick base.

No. 9.—Mechanical press, No. 1; triple pressure of about 30 tons; capable of turning out 200 to 300 articles per hour with two men; weight, 35 cwt. Price, 88*l.*

No. 10.—Mechanical Press, No. 2. Pressure and production the same as last; weight, 22 cwt. Price, 72*l.*

No. 11.—Lever Press. Pressure about 7 tons, actuated by a sudden shock by one man, giving a result of 4 to 500 articles per hour; weight, half a ton. Price, 24*l.*

No. 12.—Machine for Pressing Vertically. Weight, 3 tons. Price, 120*l.* Capacities not stated.

Horse-gear for working Machine No. 3 with one or two horses; weight, 12 cwt. Price, 20*l.*

Ditto, for No. 2 machine, with one or two horses; weight, 18 cwt. Price, 24*l.*

Ditto, for four horses; weight, 21 cwt. Price, 25*l.*

It will be easy for any one who desires it to compare these data with those of our English machines.

The two English cement firms named Francis both exhibited; but whilst C. Francis, Son, & Co., of Newport, have received a silver medal, Francis & Co., of Vauxhall, have not been patronised by the jury. Their (C. Francis, Son, & Co.'s) plaques of Parian cement were better than those in Portland cement, and their slabs of Scagliola were good. Each of these firms exhibited barrels of Portland cement, both being, no doubt, excellent; but the proof of the pudding is in the eating, and to no other material does the old saw apply probably with greater appropriateness than to cement. We are not aware what means the jury took to test these cements other than by the eye.

Our old friend, M. Coignet, the father of concrete in France, had a little kiosk in the middle of the grounds, containing every possible variety, coloured and uncoloured, in mosaic, in imitation granite, and so on, the variety which the schoolboy would recognise as "hardbake" being pleasing when close to it, but disappointing, if not distinctly offensive, at a little distance.

Mr. Skelsey, of Hull, exhibited his "Adamant" Portland cement, but without result; and there were several imitation marbles in stucco, more or less displeasing, the best of which were by Corbineau, of Nantes, who styles himself a "stucateur."

Good stalls of hydraulic limes, Portland cements, and clays were exhibited by Deschamps and Faut, of Des Moulineaux, Issy-Seine (system Vicat); by Poliet, Baillot, and Ville-vielle (silver medal), of Beffes (Cher); and also by Sollier and Co., of Boulogne.

A silver medal is awarded to A. Dubousset, of Beauvoir Allier, for samples of Kaolin, showing the gradations of disintegration from grey granite to pure, natural Kaolin, and showing white, grey, rose, yellow, and red varieties.

Messrs. Ponton, of Deptford, exhibited their petramite, which is stated by them to "be a mixture of sand and pulverised silica, which changes into a new crystallised state of silica, and, being entirely free from silicates, is unalterable by intense heat or boiling acids, and is superior to the finest statuary marble." Both white and grey varieties were exhibited. We regret that we cannot concur with the manufacturers in the comparison which they institute between petramite and statuary marble. The white is unquestionably a good white, but its resemblance to good marble is not sufficient to deceive anyone at all conversant with that substance. The price quoted is 3s. 6d. per cubic foot.

In the French Section two model kiosks were erected of a material called Blanc Minéral du Barry, and exhibited by Baumann & Co., of Bougival (Seine-et-Oise). This is a composition of chalk, pulverised, and subsequently mixed with some cementing material, tinted if desired, and moulded into any shape or for any purpose, such as for models. It is difficult to recognise any special value attaching to it, and the jury have apparently formed the same opinion.

Among examples of natural stones not well known here, may be mentioned the three different kinds that were exhibited by M. G. Biron, of Paris, two of which are good,—namely, a beautiful hard white limestone of the character of our Hopton Wood stone, but rather whiter, and taking a fair polish; the other being still harder, and taking a good polish, light drab in colour, with light-brown fossils. They come from quarries at L'Echaillon par Voreppe (Isère).

M. Le Blanc, of Paris, had a magnificently-executed chimney-piece, of 13 ft. total width and 19 ft. in height, with three carved figures in Conflans stone, enshrined in an arcade of three bays. The body of the work,—in fact, every part except the figures and the bases of the lower pilasters,—is in St. Maximim stone, from quarries on the Oise, a variety of limestone similar, but apparently inferior in character, to Caen. This firm also exhibits samples of the stone from the different beds of their quarries,—a plan which might often be followed with advantage to the public.

1.—St. Maximum (Oise) has six beds—Roche, Fine Roche, Roche (moyée), Demi Roche, Banc Royal, and Vergelé.
2.—Conflans (Seine-et-Oise) one bed only.
3.—Vitry (Seine) Roche, Banc d'Argent, and Demi Roche.
4.—La Jeunesse Buceyles Gy (Haute Saône).

The latter (4) are hard fossiliferous limestones of grey, buff, and pink shades, and, as usual, take a fine polish. A fine example of them is exhibited in a balustrade, each kind being utilised for the various parts.

The Belgians (Union des Maîtres de Carrières Belgique) erected for their offices a building of ordinary white limestone, faced with the dark-grey limestone styled by them "Petit Granit," from Soignies, and exhibiting the differences in shade produced on the same stone by the various descriptions of work. In this stone the polished panels are black, the picked worked dark-grey, the fine-tooled light grey. The effect was not very happy, there being a coldness and slaty appearance about it somewhat repelling.

The steps of the machinery-hall had been executed in a compact white limestone, slightly tinged with pink, from M. Javelle, of Belvoye (Jura), and notwithstanding the extraordinary wear to which they have been subjected, seem now as good as new; but, so far as that goes, many of the concrete steps in the gardens which had been subjected to as much, if not more, wear than those in the machinery-hall, had also done their work most creditably.

The finest display of marble in the Exhibition was that of M. Contini, of Marseilles, very choice examples of Jaune de Marseilles, Rose Tunisie, Porphyre d'Egypte, Rouge d'Afrique, Syenite d'Egypte, Onyx d'Algerie, Vert Antique, and Vert de Mer, Agate Pyrennien, Bleu Turkien, Jasper Egypte, Breche Violette, Sicilien (of more than one variety), and the rare and expensive Cipola Rose. These are grouped round one of those horrible statues which we occasionally encounter, in several kinds of coloured marbles, the hair of one colour, the drapery of another, the eyes of another, &c.; works which offend every sense of appropriateness and of the fitness of things, and are a desecration of the most beautiful material. Messrs. Farmer & Brindley, of Westminster, had a considerable show, comprising examples of both English and Oriental alabaster, Aventurine, Egyptian porphyry, Espagnol, Huelva, Breche Orange, Frosterley, Labradorite (green), and Thulite, a rose pink spotted with white, and not particularly pleasing, though of a rare shade. They had also twelve slabs of Devonshire marble, but no indication of the localities from which they were derived. None of them were particularly striking, except one fine dark grey, which seemed to be a variety of the Petworth, and one other similar to Huelva (a mixture of chocolate, slate, and white).

With the exception of the alabaster and the Frosterley (of Durham), the exhibition of these English marbles was a somewhat severe commentary on the remark said to have been made recently by one of the British workmen's delegates to Paris, to the effect that architects should specify that no marbles other than those of England and Connemara (which, by the by, is a serpentine) should be used in our houses. This sort of clap-trap patriotism (?) is utterly ridiculous, and it would be as sensible to say that we must put up with bad flour or English tobacco, or that we should cover our roads with dirt instead of hard stones, in order to make more work for local labourers.

The French marbles of the Vallée d'Ossau, in the Basse Pyrénées, in which Eaux Bonnes is situated, were well illustrated, together with a map shewing the positions of the twelve quarries belonging to the Company, as follows:—On the left bank of the river (as you ascend), Arndy, Izeste (Sonders), Izeste (Brousset), Bar, Cipolin, Pau, Miegebat (Carmine), Miegebat (Noir); on the right bank of the river, Louvie (Plon), Louvie (Soubiron), Fabreges, and Soques. The Bar quarry is one of granite,—singularly white, shaded with light grey. The marbles generally are of a beautiful grey, both veined and shelly, and veined with white and purple. There are no greens or yellows. The Company also exhibits fine slate from Laruns and Gerebelesten, in the same valley.

Holtzer & Co., of Paris, exhibited Villefranche Violet, a pleasing mixture of violet and purple streaked with white; two varieties of Griotte, a deep red or chocolate either veined or flecked with white, for which we did not much care; and three varieties of Escalet, viz., Moucheté and Moucheté Campan, combinations of light and dark slate, chocolate, pink, and white, and Jaune, a curious yellow mottled with chocolate. One block of Griotte veinée was 17 ft. long and about 3 ft. square.

The Société Anonymé de Merbes-le-Château of Belgium displayed a series of fine slabs, each about 12 ft. long and 6 ft. wide, of the following:—

Granit (Poulseur), a black shelly limestone with white fossils.
Blanc Puissant (Massa), pure white.
Rouge Fleuri (Santour), dark chocolate streaked with white, and blotched with black-edged white fossils.
St. Anne (La Buissière), dark slate, streaked and speckled with white.
Rouge Griotte (Vodelée), light chocolate, well streaked and blotched with white.
Noir Fin (Golzinne), pure black.
Rouge Royal (Vodelée), similar to Rouge Griotte, but a paler chocolate.
Florence (Profondeville), grey slate colour blotched with black.

Rouge Griotte (Bergnonry), rich chocolate, blotched with grey and streaked with white.
Blanc Clair (Carrara), white, streaked with grey.
St. Anne Francais (Sobre St. Géry), dark slate, rather less streaked with white than the St. Anne of La Buissière.

Several of these dark marbles, and especially the Florence, were strikingly handsome. A beautiful black slab and a square platform of variegated Belgian marbles were also exhibited by Duboy. Gros Jean & Son, of Isnes les Golzines, and a remarkably beautiful marble, the matrix a brown pink flecked with chocolate, embedding blocks of black and grey streaked with white, was exhibited both by E. Decroliere and Leon Boucneau, the quarries being at Montigny-le-Tilleul, Belgium.

Taking a general view of the above-mentioned classes of exhibits, we may fairly conclude that we cannot dispense with foreign marbles, and that we can get them both good and cheap from France and Belgium; but that we can get on well enough without foreign stones, except, perhaps, that from Caen, and possibly that from Conflans. It is less easy to get the latter than the former, and of no especial advantage, for their character is similar; but for fine work there is nothing yet discovered in England at all equal to that from Caen, and for general building in this class of stone, it is a popular error to assume that the good qualities of Caen have not the durability of our Bath and other similar stones. That which will last in the country in France will last in the country in England, either for interiors or exteriors, but we must have the best, *i.e.*, the stone from the Allemagne and not from the Maladrerie quarries.

Machinery for working on stone or marble was extremely scarce, but two sawing-machines were exhibited of novel character. One of them, of which a model only was exhibited, is an American invention, the diamond having been requisitioned to help in the work. Small diamonds are set at intervals along the lower edge of a very deep blade set in a frame which oscillates from a central overhead pivot, one end of the frame being attached to an arm actuated in the usual manner. It is not known what are the capabilities or the registered performances of this machine, but it is stated to have had a great success in the United States, and that its success in France would be indubitable. It is described as the "Systém Jackson." It appears to us that the system is inferior in several respects to that commonly used in England for sawing stone and marble without diamonds.

The other machine is altogether of a different character, and is, we believe, essentially different, both in principle and in method, to any other stone machine yet introduced to notice. It is the invention, or, at all events, brought out and manufactured by M. Gérard, a mechanical engineer of Paris. The reader would have some difficulty in understanding the details of a structure of this kind unless he had the opportunity of studying an illustration, but we may say that the principle is that of the continuous band saw applied horizontally. The saw (in the machine exhibited) is of steel passing round a pair of drums, to which rotation is given by a sliding spindle passing through one of the drums and geared to a horizontal spindle in the upper part of the frame of the machine, worked as usual by a belt from the engine. The drums are each attached to a frame connected with a pair of collars, which work vertically on four strong hollow cylinders placed one at each angle of the bed-frame. On this frame are cross rails to carry a truck, with a revolving platform for carrying the stone to be sawn. The saw is guided on each side by friction rollers, and passes on each side through a box, which can be fed from above with sand and water. These collars, with the drums and saw attached to them, can be lowered automatically by means of sliding collars working on long screws in the hollow cylinders. The saw consequently makes two cuts with each revolution, either on two stones or on one as may be desired. The speed of lowering the frame is regulated by the nature of the stone to be sawn; the speed of the saw was stated to be from 450 to 500 métres per minute, which would give about thirty revolutions.

The length of stone which could be placed under the saw in the machine exhibited was about 11 ft., or 22 ft. in all.

The advantages claimed by the inventor are

1. Great speed in sawing; and he gives the following as the depth of stone which can be sawn per hour:—

From 10 ft. to 16 ft. in soft stones.
„ 10 in. to 12 in. in hard stones.
„ 4 in. to 6 in. in different marbles and hard stones.
„ 4 in. to 5 in. in Belgian and similar granites.
About 1 in. in Brittany, Normandy, Scotch, or Italian granites of extraordinary hardness, which have hitherto always had to be worked by hand.

2. A perfectly-sawn surface, well dressed and almost polished, contrary to that which is produced by means of other stone-sawing machines. In addition to this, the appearance is regular, and the stops sharp, without flaws. By this means all the operations usually attending ordinary sawing, which are often long and costly, can be dispensed with.

3. Great economy in motive force and hand-work.

It is stated that the machine exhibited could be worked with a 4-horse-power engine, and that one man was sufficient to look after two machines, and the inventor claims a saving of 40 per cent. advantage in effective work over any other stone-sawing machine.

The thickness or depth of stone which could be placed under the saw in this machine was about 9 ft. Its price was £560.

M. Gérard is constructing a still larger machine, of a similar kind, for the Town Council of Marseilles, which will take stones about 16 ft. long, the price of which will be £720. The weight of the machine exhibited is 17 tons.

We have described this machine at some length, because we have seen that what M. Gerard claims to do he can, at all events, in a great measure, perform. The work done by this steel saw on hard granite and marble is in every way superior to anything previously seen, and the extreme thinness of the slabs that can be sliced off by it is very extraordinary. No particular difficulty is experienced in producing sheets, or we should rather style them veneers, of granite and marble one-tenth of an inch in thickness,—a slab was exhibited in a wooden frame very much thinner than the above-mentioned,—and quite ready for the polisher. The machine is in its infancy, and consequently it is not possible to obtain reports concerning its capabilities under long trial, but M. Gérard is proposing to make it in several sizes, and to have one fitted up for inspection in motion at his manufactory in Paris (3, Place Daumesnil) in about a month's time. It is possible that this invention may economise the cost of marble for certain purposes to such an extent as to create a great impetus in the trade in inlaid marbles or marble mosaics, and in the decoration of walls internally, and possibly externally also, with very thin, inexpensive slabs of granite, marble, or other hard ornamental stone.

A variety of stone of a very useful nature, viz., lithographing stones, were exhibited by Joyeux, Hammond, & Cie., of Chateauneuf-sur-Cher, and also by F. Dupins, Givry (Saône et Loire), from the quarries at Clos Gateau, Burgundy. The prices seemed moderate, and the quality of the stones in each case very fine. In point of size, they were much eclipsed by a remarkable stone exhibited by G. Kammera, of Paris, from the quarries of Vigan (Gard), 5 ft. wide, 7 ft. 10 in. in length, and 4½ in. thick, of uniform colour and texture throughout. The price was not stated.

Architects and builders are frequently interested in obtaining good and reasonably cheap lithographed work, and the French and American lithographers gave some excellent examples of page ornament, vignettes, etiquettes, passepartouts, corners, title pages, &c. A Grand Prix was given for this class of work to Debernay & Co., of Paris, and to Beaudoire & Co., of Trouin, but their work did not appear to be better than, if as good as, that of Mackellar, Smith, Jordan, & Co., of Philadelphia, who received a gold medal, as also Ch. Derriez, of Paris. Beautiful work was also shown by Bonnet & Cie., and A. Turlot, both of Paris.

A considerable exhibit of slates from Nantes enabled us to institute comparisons between them and some of our own, very much to the disadvantage of Nantes. Those from Pen-yr-Orsedd, Nantlle, North Wales, in green and blue (alternated) roofing slates were much superior to Nantes, but received no mention, which is, perhaps, not surprising, as they formed a poor little show compared to the fine exhibit of all sizes of slates from the Oakley Slate Quarries Co., who received two gold medals.

Perhaps there is nothing in which the cost of building is more economised than by the use of the best machinery for converting timber for all manner of uses, and there was enough in the Exhibition to satisfy the curiosity of any one. The chief feature, perhaps, was the variety of endless band-saws which were being utilised to advantage towards the close in turning out thousands of puzzle toys, Eiffel towers, sofas, &c., which sold readily. Amongst others were those of Fay, of Cincinnati, U.S.A., who had a most extensive assortment of machines, and received a Grand Prize, but, in our opinion they were somewhat light generally for thoroughly satisfactory results over a period of time, and we preferred, on the whole, the exhibit of Messrs. Robinson (Railway Works, Rochdale), who received a Grand Prix for a planing and thicknessing machine, which could be also utilised (by rapid changing) for rebating and chamfering; to it was attached a very ingenious graduated scale with vernier, for regulating with extreme exactness the thickness of each piece of wood worked by the machine. Messrs. Robinson had also a graduated stroke morticing and boring machine, so arranged as to save much wear and tear in the shafts which hold the tools, and for this they also received a Gold Medal.

M. Gérard (previously mentioned), of Paris, exhibited an excellent endless band-saw, with differential pullies, and arranged either for hand or foot working. It is made entirely of metal, and is solid and portable. The upper pulley (for the saw) was 16 in. in diameter, and the lower pulley 32 in. ditto. There was no jerking when worked with the pedal, and no doubt very accurate work could be turned out with it.

A remarkable shaping-machine was exhibited by Guillet et Fils, of Auxerre (Yonne). Two carved heads in high relief were shown by them as triumphs of machine-work, and a great deal of time must have been saved in the production of these heads in the state in which we saw them—that is to say, in the rough,—for the machine tools had produced nothing that could be termed finish; but such a machine could never be of any use even for roughing out sculptor's work, as it could not possibly take account of the innumerable variations in contour required.

Parquet flooring is a fitting successor to wood-working machines, and, amongst many others, those of P. Gil à Domene (Isere) and of Maison Camps & Co., of Annemasse (Haute Savoie), each of whom received silver medals, were most worthy of notice. The coloured illustrations of various patterns in the specimen book shown by the latter firm were most artistically prepared.

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framing. An example was given of 3-in. stuff to form an external wall or hoarding connected with partitions. A bird's-mouth trimming was given to the end of each plank, the points thus meeting in the centre, and the bolts passing through from angle to angle and nutted inside. These were placed 9 in. apart vertically. It would seem that much rapidity of execution with a minimum of preparation could be secured by this method, and that for portability there was an additional advantage, the timber being uninjured in any way.

Much of the reliability of carpenters' work depends on the nails and screws that are used, and a very complete series of nails (over 200 varieties), exhibited by F. Hadley & Co., of the Mitre Nail Works, Birmingham, received a Bronze Medal. In screws we noticed a fine case belonging to the American Screw Company, of Providence, Rhode Island, U.S.A., and Thomas & Stirling, of Liverpool. One peculiarity of their latest manufacture in screws is the stopping of the groove for the driver from passing entirely across the face of the head, to which they apply the term of "swayed slot," and claim that a stronger head is thereby produced, which must, indeed, be the case. The depth of the thread is also greater than is customary with ordinary screws, and the thread is thinner, which gives it a greater hold on the wood with less distortion of the fibre. The material used for the screws is also stated to be of a different and quite superior character,—a variety of Bessemer steel,—to that hitherto used in screw manufacture.

Les Fils de Peugeot Frères, Beaulieu, near Valentigny (Doubs), had a grand show of saws and received a gold medal. The firms of Cocker Brothers, B. Huntsman, and Burys & Co., worthily upheld the reputation of Sheffield with exhibits of various classes of tools,—saws, augurs, chisels, gouges, &c.; and were unapproachable in their several specialties. Leveque, junr., of Paris, had a good case of files and rasps; and H. Garette, also of Paris, received a silver medal for well-made carpenters' planes.

Amongst other tools we noticed those for masons (including stone saws), exhibited by Bocaze, of Rue de Roche, Paris, those for plasterers, exhibited by Bouvais, of Boulevarde Voltaire, Paris, and for plaster of Paris or soft stone carvers and modellers, exhibited by Buffet Fils, of Rue Saussure, Paris, all exceedingly good, more especially those of the latter firm, who showed some beautiful examples of work done in fine stone with their tools. Nuts and bolts, from the Patent Nut and Bolt Co., of Sheffield, scored with two medals; and a gold medal was also obtained by the Hardy Patent Pick Co., of Sheffield, for an exhaustive series of the tools used by quarrymen, such as boasters, spalling hammers, &c.; and also stonecutters' tools generally. The Myers Beaver Falls Co., of Pennsylvania, had some excellent well-balanced shovels, notably the Patent Socket Strap-shovel. The steel from which so many of these machines and tools are manufactured was exhibited in various stages of its production by the Consett Iron Company, of Durham, who received the Grand Prix for their Martin's Siemen's Steel, and, in a manufactured state, by the Ebbw Vale Steel, Iron, and Coal Company, of Ebbw Vale, Monmouthshire, who had a very neatly-arranged case of samples of steel rails, sleepers, fish-plates, &c., exhibiting the sections of each.

If we were to attempt to do justice to the extraordinary exhibition of machinery for the production of other machines, we should not merely get into the province of the engineer and outside that of the builder, but Christmas would be near at hand, or more probably past, before the list of noteworthy exhibits had been exhausted. It will be sufficient, perhaps, to say that nothing in the Exhibition could be better than many of the Belgian machines and engines of the largest types, and also some from Le Blanc Georgi & Co., of Marquise (Pas de Calais). To descend from these important matters to others of a very much smaller but, in their way, not less important character,—viz., hardware,—we found that the firm of Chubb had, as usual, received a gold medal for their extraordinarily fine locks; and also the Yale Toune Manufacturing Company, of Stamford, Connecticut, a silver medal for their peculiar and now well-known locks, and for beautifully-worked black iron door-plates. But, in addition to these, some very good work was shown by several French firms,—Tessier, of La Croix aux Bailly, for copper and brass locks; Derloche-Canteville, of Ault (Somme), for fine steel locks; and a number of exhibitors from Picardy; but for excellence of work none of them could equal that of Forestier Frères, of Valines (Somme), whose locks seemed to be as good as ours.

We were disappointed with the Belgian exhibition of glass for buildings. They had a good deal from Bivort and others, of Jumet, near Charleroi, and from Mondron, of Lodelisart, and from Jemappes; the best, perhaps, was the sheet-glass, with a faint green shade, from Jumet; but two fine plates, each 20 ft. by 12 ft., of plate-glass were rewarded with medals, one from Ste. Marie d'Oignies, of Jumet, and the other from Moustier, of Jemappes. Some good glass tiles and bent-glass were exhibited by Legros, of Jumet.

But the French glass was far better; Murat, of Boulevarde Malesherbes, exhibiting excellent greenhouse and skylight-glass, and stating that they had provided 70,000 mètres (about 15 acres) for the galleries of the Exhibition; whilst the Société Anonyme, of St. Gobain, Chauny & Cirey, of 9, Rue Ste. Cicile, Paris, had a splendid show of roofing glass of all kinds and sizes, together with glass bricks and tiles and curved glass. This firm had roofed the machinery-hall at the Exhibition, having used 33,800 sheets of fluted glass $\frac{1}{8}$ in. thick. Helliwell, of Brighouse, exhibited their system of "imperishable" glazing without putty, but it did not meet with favour from the jury.

M. O. André (previously mentioned), of Rue Royale, Paris, had also a system of roof glazing of a somewhat complicated nature, the glass being puttied on to a T-rafter having an elongated base which was held by a pair of peculiar clips forming a chair, which, in its turn, was clasped to H purlins by collars; a zinc trough was also provided under the rafter. The space between the glass and the upper surface of the purlin was, in the example exhibited, $2\frac{1}{2}$ inches. The trough can be slid into its place in the folds of the chair after the glazing has been completed. On the whole, we think we prefer Helliwell's system: but this is worth trying, as the advantage of roof-glazing that will exclude the wet under all circumstances is of very considerable importance.

The manufacturers of the Vieille Montagne Society are too well-known in England to need more than a brief description. Their zinc, silicate of zinc paint, satin zinc, and other works in that metal were well exhibited in a separate hut, the windows and balustrades of which were executed in moulded zinc in the Renaissance style, and painted with dead white zinc paint to resemble stone. The deception was somewhat remarkable, and to those who are ill-judged enough to desire appearance without solidity, and wish to obtain it at an extraordinarily low price, this class of work would recommend itself.

Chennevière et Fils, of Belgium, also exhibited ornamental cornices, architraves, window-sills, &c., in moulded zinc on the same system as the Vieille Montagne, and zinc-roofing in the shape of ornamental tiling or slating. There were several thin black low-priced roofing felts, the best of which appeared to be that called "carton coir," exhibited by Derfeux, of Paris.

Good shutters and blinds are an everlasting comfort, in place of being what such things too often are, an everlasting nuisance, and a good many examples of shop and house shutters were exhibited, not only by our well-known firm, Messrs. Clark & Bunnett, but by several French firms, and notably by Eperche, of Rue Bernoilli, Paris (wooden house-shutters); Lacour (light iron house jalousies); and Chedeville & Dufrene, of Rue de Tocqueville, who had fitted up a shop with a variety of excellent shop-shutters on the "instantaneous" counterpoise system in steel-plates, for fronts of 12 to 15 ft. in length, and the "silent" shutter in corrugated steel. Their folding shutters (in two or three leaves) were beautifully made, and they also exhibited simple dinner and luggage lifts for hand-work, very well finished. Baudet, Donon, & Cie., of Rue Saussure, Paris, exhibited some combination wood and iron folding shutters, the frames being of iron and the louvres of oak, whose effect was pleasing, and they would probably be very durable.

Fastenings for French windows were well illustrated by A. Bernard, of Rue des Souries d'Artois, and several others, and are a very seriously-important matter for the comfort of dwellers in houses. So is the regulation of a fanlight; and Messrs. G. Magnant, of Boulevard Bonnevoule, Paris, exhibited two modes of dealing with the difficulty:—1. The Croizemarie, a rod, the top of which is level with the upper sash-bar of the fanlight, is connected with it by a small cog and worm; the rod, enclosed in a metal sheath, which is fixed to the frame, passes down to the level of the hand, and terminates with a handle attached to it by a cup-and-ball joint. By twisting the handle round and round, the fanlight opens gradually to the extent desired. This is much better than cords. 2. The Cremone-Vasistas. A somewhat similar system to the other, but the head of the rod is connected with a bar, the other end of which is slotted, and works on a thin button attached to the middle of the sash. This bar is only 3-16 in. thick, and closes the joint when the fanlight is closed, lying flush with its face; there is a corresponding bar at the other end of the fanlight hinged on a screw attached to the frame. In this instance the fanlight opens downwards from the top, whilst in the Croizemarie it opens upwards from the bottom. They had also another system for opening fanlights sideways. These methods appeared to answer very satisfactorily.

For flexible tubing for communication, an excellent kind was exhibited by P. Sorgne, of Paris—india-rubber cased with very fine, plaited galvanised iron wire. These were also stated to be available for gas and pneumatic work.

A distinctive feature in the Machinery Hall was the considerable exhibition of cables and ropes, both in hemp and steel. Those of the Commission des Ardoises d'Angers; of Bessonneau of Angers, of Fretć & Co, Boulevard Sebastopol, Paris; of A. Stein Danjoutin, Belfort; of the National Cordage Company of New York; and of Vertongen Goens, of Termonde, Belgium, were very remarkable, the latter firm having a specialty of woven flat ropes of great strength, in steel and hemp. The London Water Meter Company obtained a gold medal for their "Differential positive" water-meter, for which they claim twenty-one advantages. The French are said to be a thrifty nation, and this quality was illustrated to a remarkable extent by the quantity of excellent safes shown by many firms. If the number ordered from a firm is a fair criterion of their excellence, then the palm must go to H. Chaudun (Petit Jean), of Paris; but the firm of Messrs. Chubb will still hold their place thoroughly so far as delicacy of workmanship is concerned.

The excellence of Doulton's and Jennings's sanitary fittings are too well known to justify any space being taken up in our columns to describe all the articles for our domestic comfort and convenience that they showed.

We have been profoundly impressed with the advance made, both in France and Belgium, in the manufacture of very many things that we believed previously that we English excelled in, and could make much better than any one else. What the reasons may be for the English exhibits not being up to the standard of previous Exhibitions, it is not our province to touch on, but the fact remains that we have been matched—we will not say overmatched—in many ways; and in

these practical departments, as in others, the Exhibition, as a whole, has been very far in advance of anything of the kind hitherto attempted.

NOTES.

IN a letter to a recent number of the *Glasgow Herald*, which has been forwarded to us, Mr. John Honeyman, the well-known architect of that city, in reference to a remark that had been made in the *Herald* that "the building regulations of Glasgow are at present on their trial," says "they have been so for many years, and in the opinion of all best qualified to judge have long ago been found to be utterly wanting." Mr. Honeyman continues:—

"Several years ago the Glasgow Institute of Architects made a vigorous effort to bring the matter home to the conviction of the authorities. They gave the matter the most careful consideration, interviewed the Lord-Advocate on the subject, and, at his suggestion, prepared and printed a draft of such regulations as they thought suitable. Indeed, they spared neither time nor expense in their disinterested attempt to get these building regulations amended for the better protection of the community, and I have no hesitation in saying that their efforts were unavailing entirely through the apathy of the Glasgow press, which practically ignored them, — as it too generally does things architectural. The obstacle, so far as the authorities were concerned, was simply unwillingness, begotten of sentimentality, to do away with that time-honoured institution, the Dean of Guild Court, for which not one word can be said by anyone who takes the trouble to consider how the work entrusted to it is done elsewhere,—at least in England, where the admirable results to which you refer are obtained. Surely the fact that the preventable fires in London are at the rate of 5 per annum, while in Glasgow they are at the rate of 31, is not a reason for giving additional power to that antiquated and unsatisfactory body, the Dean of Guild Court, as you imply, and as ex-Dean of Guild Walls some time ago insisted, but rather a convincing argument in favour of our assimilating our practice here to the London practice, involving the radical change which the Glasgow Institute recommended. There is not a district in London where the buildings are not looked after by a thoroughly competent surveyor, who, as required by the Act, has passed an examination conducted by the Royal Institute of British Architects; and, in point of fact, some of the most able architects in London are district surveyors. Here, on the other hand, the authorities cling to the egregious mistake of believing in 'the practical man.'"

Of the apathy of the daily press on architectural subjects (except when some excuse occurs for getting up a sensation article in abuse of architects) we know something in London, and we are entirely at one with Mr. Honeyman in his distrust of the so-called "practical man." At the same time, as far as the question of building regulations goes, it appears to us, on the basis of the evidence as at present forthcoming, that the Templeton mill could have been built under the London Building Act, and that no District Surveyor could have legally interfered with it. The calamity cannot, therefore, as far as one can judge at present, be attributed to any special and peculiar defect in the Glasgow building legislation. The moral, as we have already said, is that it is not enough that a building should be so constructed as to be safe when completed; it must be safe while in course of construction; and, in view of possible contingencies, building regulations require to be carefully considered, and where necessary revised, to this end.

IN connexion with the Railway Rates Inquiry, now proceeding at Westminster Town Hall, a rather singular circumstance may be noted. At the resumption of the inquiry on Tuesday, Lord Balfour stated that, for the convenience of those interested, he would furnish the Press at the close of each day's proceedings with an outline of what would take place at the next sitting. This excellent arrangement was promptly put into force, as far as Lord Balfour was concerned, —his lordship stating at the close of Tuesday's proceedings that, after the cross-examination of Mr. Findlay, individual traders and others would be heard, there being 18 or 20 gentlemen who had sent in their names as witnesses. If anything be needed to prove the interest with which this inquiry is being followed, it may be found in the fact that Lord Balfour made the arrangement alluded to in response to a large number of requests received by the Board of Trade for information as to the line of proceedings intended to be taken; but the *Times* of Wednesday, although devoting fourteen columns to the proceedings of another Commission, and seven more to political speeches, contains not even a paragraph relating to this important subject. It is satisfactory to find that the Board of Trade have determined to refuse their assent to unclassified articles being charged at the highest class rates. Mr. Findlay admitted that it would be impracticable always to do so, and remarked that there were many articles upon which they found it impossible to charge the maximum rate, as it would stop the traffic. It seems hardly worth while to invest the Railway Companies with still further powers which they would be unable to use,—especially as the proposal in question is so sweeping.

THE New South Wales Parliament has recently authorised the construction of some extensive sewerage works in that colony, and the Government are about to proceed with the sewerage of the western suburbs of Sydney, at an estimated cost of 1,817,896*l.*; the sewerage of St. Leonards and other boroughs at North Shore, at a cost of 106,000*l.*; and of the borough of Manly, at a cost of 34,000*l.* The engineer who has devised these extensive works is Mr. George H. Stayton, M. Inst. C.E., formerly of London. Mr. Stayton is on a short visit to this country, the Government having commissioned him to inspect and report upon the latest systems of sewage purification. It may be mentioned that the population of Sydney is now nearly 400,000, but the works are designed for a prospective population of 750,000 persons.

SIR SYDNEY WATERLOW has not only done a noble and generous thing by the gift of his Highgate estate to the London County Council for a public park, but he has shown a remarkably common-sense and practical spirit in the reasons he has given for choosing this way of benefitting his fellow-men. We reprint these in his own words:—

"Commencing the work of my life as a London apprentice to a mechanical trade, I was during the whole seven years of my apprenticeship constantly associated with men of the weekly wage class, working shoulder to shoulder by their side; later on, as a large employer of labour and in many various other ways, I have seen much of this class and of the poorer people of London, both individually and collectively. The experience thus gained has from year to year led me more clearly to the conviction that one of the best methods for improving and elevating the social and physical condition of the working classes of this great metropolis is to provide them with decent, well-ventilated homes on self-supporting principles, and to secure for them an increased number of public parks, recreation grounds, and open spaces. This latter object can, I think, be best accomplished by the kindness of individuals, acting through the agency of the London County Council, and with as little burden as possible on the public rates."

It is perhaps only fair to the County Council to add that gifts such as these, of property to be dealt with by them for the public good, furnish an important indication of the confidence which is felt in the County Council as an administrative body.

THE sudden death of Mr. Joseph Gordon, the Chief Engineer to the London County Council, ensuing so soon after his appointment to an office of so much importance, is to be deeply regretted, not only on personal but on public grounds. As has been but too evident of late years in the almost periodic floodings of certain districts of London—floodings which have been only partially obviated by the costly relief sewers which were constructed by the Metropolitan Board in the last few years of its existence,—the main-drainage system of the metropolis calls for careful investigation with a view to its being supplemented by such works as may be necessary for the health of London. Mr. Gordon was engaged in this investigation at the time of his death, and had, Lord Rosebery stated on Tuesday, just completed an important report upon the Abbey Mills Pumping-station. That the position of things connected with this subject is very serious may be inferred from the grave statements publicly made at the meetings of the London County Council by some of its engineer-members, and referred to by us in a "Note" a fortnight ago (see *Builder*, p. 307, *ante*). We are therefore glad to see that there is to be the least possible delay in filling up the vacancy caused by Mr. Gordon's death, but we trust that no effort will be spared to secure the best possible man for the office. We say this because, while we think that on the last occasion the Council made a very good choice, the name of at least one highly-eligible candidate, as we pointed out at the time (see *Builder* for July 20 last, p. 42), was unaccountably omitted from the list of names submitted to the Council as that from which the choice had to be made.

THE School Board have just issued their yearly statement of the additional supply of accommodation which they find to be necessary for the London district, in the shape of new buildings or the extension of existing premises, together with an enlargement of their chief offices on the Victoria Embankment. The schedule comprises a list of thirty-seven school sites in all. But inasmuch as six out of twelve of these constitute alternative sites, the actual number of new and extended schools about to be provided amounts to thirty-one. These are distributed amongst the several Divisions in the following manner:—City: Gravel-lane school, Houndsditch,—1. Chelsea: Hugon-road, New King's-road (part of Messrs. Veitch's nursery ground), and Everington-street and Lillie-road, Fulham, with Waterloo-street, Hammersmith,—4. Finsbury: Brecknock-road (part of the ci-devant Queen's College), or North-road, Islington Cattle Market, being two alternative sites; Trinity-street, and the Forster school in Hornsey-road, by the Holloway swimming-baths, all situated in St. Mary, Islington,—3. Hackney: Gayhurst-road, by London-fields, and Gainsborough-road,—2. Marylebone: Kingsgate-road, including portion of garden belonging to "The Grange," Hampstead, and Bell-street, Marylebone,—2. Tower Hamlets: Priory-street (including the National School by St. Leonard, Bromley, parish church), or St. Leonard-street, Bromley, being two alternative sites; with Morris-road, Bromley; Dalgleish-street, St. Anne, Limehouse; and Whitehorse-lane, adjoining the Trafalgar-square schools (cookery centre) in Mile End Old Town,—4. Westminster: Horseferry-road and Tufton-street,—1. East Lambeth: Sayer-street, by the Metropolitan Tabernacle Almshouses, or Station-road, hard by, being two alternative sites, and Bird-in-Bush-road or Commercial-road, Camberwell (abutting on the Licensed Victuallers' Asylum), also two alternative sites; with Choumert-road, Camberwell, and Beresford-street, Newington St. Mary,—4. West Lambeth: Sussex-road, Loughborough Park, and Latchmere School, Battersea; with Kennington-road and Stannary-street (including the tavern by sign of "The Sign is in the Cellar"), or Grove-place and Kennington-road, Lambeth St. Mary, being two alternative sites,—3. Southwark: Hatfield-street and the Board School,—1. Greenwich: Kemsing-road and Halstow-road; Siemens-road and Bowyer-road, Woolwich; Greenwich Marshes, by St. Andrew's Church; Clifton-road and Edward-street, Deptford, and Stanley-street School and Mornington-road, Deptford; together with Wellington-street, by St. John's Church, or Mulgrave-place and Wellington-street, Woolwich, being two alternative sites,—6. After taking a mean between each pair of alternative sites, we find that the amount of ground which is scheduled

for school purposes may be taken as covering a total of 707,595 square feet, more or less; that is, say, very nearly 16¼ acres. The Board have also scheduled, for the extension of their offices on the Victoria Embankment, a plot of ground about 8,836 ft. superficial, situated in St. Clement Danes parish, which abuts, westwards, on their present offices, and eastwards on Milford-lane and Messrs. Gwynne's workshops.

IT is rumoured that the projected purchase of the Opera House in the Haymarket, by a syndicate, will result in the erection of yet another vast hotel upon its site. The original house was built by Sir John Vanbrugh with a subscription of 3,000*l.*, in 1704-5, the foundation-stone being inscribed "The Little Whig," in tribute to the Countess of Sunderland, a reigning toast of that day. The first season was opened on April 19, 1705, by Betterton, with the "Triumph of Love." Some twenty-five years later another subscription of 50,000*l.* was raised, and since George I. engaged to give 1,000*l.* yearly the theatre was styled "the King's." Its history is to be identified with that of the introduction and establishment of Italian opera in England, varied with oratorios, and with the masquerades of Delphini, Heidigger, and others. W. Capon's drawing, as printed by Smith, of Vanbrugh's building, shows us a common-place elevation of red brick and rustic work, about 35 ft. in length, having three round-headed doorways, two floors above, and a tiled roof. In 1782, Michael Novosielski made many alterations of its interior, and in 1790–1 he entirely rebuilt the house, which had been destroyed by a fire. Here was Ridaud's fencing academy; in a plan (1794) in the Crowle Pennant, the name of "R. B. Sheridan" is given as that of the tenant of a large house just north of the opera house,—Charles-street was not then made,—entered by a court between Nos. 75 and 76, Haymarket. Kelly's saloon, abutting against the opera house, stood at the angle of Pall Mall and Market-lane (St. James's Market), near to the present Opera-arcade, the resort, says Mr. G. A. Sala, of hypochondriacal boot makers. The saloon formed an "early door" into the house. Novosielski's new house, into which he had introduced the continental horse-shoe shaped auditorium, was modified, as to its exterior, by Repton and Nash in 1819-20; the arcade columns, as at Drury-lane, are of cast-iron; the artificial stone basso-relievo along the Haymarket front was designed by Bubb. Clarkson Stanfield, R.A., painted the drop-scene. In 1846 Mr. Lumley is stated to have realised a very great sum by selling boxes in perpetuity. This house was burnt out on December 6, 1867. The late Lord Dudley, as lessee under the Crown, rebuilt it at an expense of 50,000*l.* The contractors were Messrs. George Trollope & Sons, who completed the work in nine months, after the designs of Mr. Lee, architect. In 1874 the premises were offered for sale at auction; in the following year they were hired for the "revival" services held by Messrs. Moody and Sankey. In the old house Handel's "Rinaldo," his first opera, was brought out, in 1711; on April 4, 1739, his "Israel in Egypt" was first performed here; and "Belshazzar" on March 29, 1745.

THE spire of St. Mark's Church, Birmingham, appears to be in a dangerous condition. According to the local press, the stonework of the whole building is rapidly crumbling and decaying away,—so much so that, although it was only built in 1841, the masonry is so far gone that, except for the style of the edifice, it might easily be imagined that it was erected some 700 or 800 years ago. The City Surveyor has served a notice on the vicar, as "the owner of a ruinous and dangerous spire," to begin to take the same down within three days, and to do various repairs to the churchas speedily as possible. It is said that the church was built from designs by the late Sir Gilbert Scott, that the stone was a gift from a local family who took an interest in the building, and that a member of the same family was the first vicar. The inference to be drawn from certain comments on the subject as to who ought to be held responsible for the selection of the material is that, in the main, the architect is to blame. Judging from the statements made, there can be but little doubt that almost the sole cause of the decay of this imposing structure is due to the "unwise selection of building stone," but we think that anyone who understands the usual methods of selecting stone in cases like this, where the material is "generously" given by a patron for the erection of the edifice, will see that the architect has not, as a rule, so much to do with the choice of material as the donor. We could give several instances where landowners having stone on their property have practically prohibited the utilisation of other material in buildings erected for them, even although the architect has pointed out the superior quality and greater desirability of employing these latter. This may not be exactly the case in regard to the Birmingham church alluded to, but it looks very much like as though it were so.

WE have received from Mr. F. H. Berry, electrical engineer, a very compact form of electric bell patented by him. The working parts are placed entirely within the bell itself, so that it alone, together with the two binding screws, are visible on a wooden base. The electro-magnet consists of a soft iron bobbin, on to which insulated wire is wound, and two small side-projections from the rims of the bobbin serve as the pole-pieces of the bar magnet thus formed. The vibrating armature is placed parallel to the magnet; one end is almost in contact with a pole of the magnet, so that the other, which carries the striker, has a powerful pole induced in it opposite the pole-piece of the magnet to which it is attracted. By this ingenious method of shortening the magnetic circuit the armature and electro-magnet, similar in many respects to those of the Jensen bell, occupy about a third of the space taken up by the old horse-shoe pattern. A small lug projects inwards from the bell to receive the strokes from the vibrating armature. We have tried the device with a single quart-sized Leclanché cell, and find that it works well.

THE catalogue of the collection of "Studies for Pictures" now being exhibited at the Fine Art Society's Gallery is prefaced, to our surprise, by an intimation that the correspondence preliminary to the formation of the exhibition led to the discovery that a very small proportion of the artists appealed to were in the habit of making preliminary studies. We presume this means that they did not make such studies as would be presentable for exhibition. We can hardly imagine a picture worth anything being produced without some kind of preliminary trial of the grouping or composition. Among the elect who do make studies are included Mr. Richmond, Mr. Burne-Jones, Mr. F. Dadd (whose monochrome study for his large drawing "All's not Gold that Glitters," is almost like a finished picture, *minus* the colour), Mr. Walter Crane, Professor Legros, Mr. G. D. Leslie, Mr. Marks, Sir F. Leighton (the largest contributor), Mr. Watts, Mr. A. Moore, Mr. Tadema, Sir James Linton, Mr. W. E. F. Britten, Mr. C. C. Seton, Mr. F. Dicksee, Mr. Poynter (a very large contributor), and Mrs. De Morgan (Miss Pickering). The last-named artist contributes some curious-looking ideal compositions executed in gold on a very dark-tinted paper: they look more as if done for decorative effect than as studies in the ordinary sense. Professor Legros' sketchy figures, shaded vigorously and freely in line, are among the best portion of the collection regarded as examples of mere studies for figures to be finished in another medium; there is a very free broad vigorous style about them; his landscape studies seem rather too like echoes of the "Liber veritatis." The studies of Mr. Burne-Jones include a number of beautiful and finely-finished little drawings of figures and drapery; a head (18) remarkably like a Leonardo da Vinci in expression, and an exquisite little "Floral Study" (13). Among Sir F. Leighton's contributions is a beautiful little drawing of architectural detail, "A Venetian Well" (83). Among his other studies will be recognised the foundation of many well-known works. Mr. Poynter's studies include two for his large and fine picture of "Atalanta's" race, and some interesting studies of armour. Among Mr. Tadema's few contributions is a beautiful little nude study (113) on toned paper with the high lights touched in white. Mr. Watts's drawings are only three in number, two slightly but very delicately executed profile heads, and a small most delicately drawn figure of a lady in modern dress, which is one of the most beautiful things in the collection, though we do not think it comes properly under the definition of a "study;" it looks more like a drawing made for its own sake.

WE hear that the Department of Science and Art have placed on the Art Primer list of the Department Mr. Ralph Neville's work on Old Cottage Architecture in Surrey, originally published in the columns of this journal.

THE Exhibition of the Institute of Painters in Oil Colours is a somewhat melancholy place to visit. The standard of work seems to be getting lower and lower, and the walls of the three large rooms are covered with works of which few rise above medocrity and too many are below it. The President, Sir Jas. Linton, has not thought it worth while, apparently, to contribute anything. When the Institute made their ambitious move into much larger rooms they do not seem to have sufficiently considered that a larger area of wall-space may be a curse rather than a blessing, unless there are means to fill it in a satisfactory manner. Among the few redeeming works of the exhibition one of the most noteworthy is the large picture by Mr. Fulleylove, "A Royal Palace" (94), being a representation of the garden-front of Hampton Court from the opposite side of a pond larger than the actual one, and with some fountains and sculpture apparently suggested by Versailles, as foreground objects: this is a very fine work, though we might like to have seen a little more decided appearance of texture in the palace front, which is a little too woolly-looking for architectural work even when removed a considerable way from the foreground. Mr. C. E. Johnson's "Waiting for the Milkmaid" (104) is a good example of his painting of quiet realistic scenes of English landscape, and Mr. Adrian Stokes's "Souvenir of a Quiet Night" (87) is a fine study of moonlight effect. As a representation of a special effect of light on water Mr. A. Harrison's "Evening" (467) is worth note, though only a large sketch, as is also Mr. Alfred East's powerful sketch of a sunset effect (475). Mr. Hugh M'Lachlan's "October Storm" (567), a dark rugged foreground and trees relieved against a wild sky with flying clouds, is a very fine thing. Mr. Burton Barber is in his best form with two dog pictures, "Amateur" (11) and "A Portrait" (513), and Mr. Yates Carrington with his picture of "The Vagrant's Dog" (304). Mr. F. D. Millet's "The Best Trump" (184) is one of the best painted and most finished works in the exhibition, noteworthy especially for the admirable combination of truth of local colour with a broad diffused light in the interior; the figures, very well painted, are not of much character or interest. This cannot be said of Miss Beatrice Meyer's clever and highly-finished little scene from "The Antiquary," Lovell reading the story of the Harts Goblin (81), which has however been put down on the floor, while many far inferior works are on the line. Mr. Tom Lloyd's "Our Ducks" (145) is a beautiful evening scene steeped in warm light which does not however quite overpower the chilly green of the foreground field. Mr. Frank Dadd's contribution is an interior

with figures of an old man and a child, "The Scrap-book" (363), an excellent little work but not nearly so interesting as some of his in previous years. Mr. John Collier sends a very pleasing half-length portrait of "The Hon. Mrs. Collier." Among the few other works above the average are M. Fantin-Latour's "Bouquet Varié" (78) and his curious dream picture of ghostly nude figures in a ghostly landscape, entitled "Songe" (512); Mr. Adrian Stokes's "A bank where the wild thyme grows" (219); Mr. W. H. Bartlett's "Intruders" (293), a study of two nude little girls on the seashore; Mr. T. Collier's "Millstream and Lock" (403: not equal to his best works); Mr. Dollman's "Content" (549), a carefully-studied group of donkies revelling on thistles; and Mr. Eric Forbes Robertson's "Evening Sunlight" 290, a very truthfully-rendered effect of light. The whole exhibition, however leaves the impression that the Institute can hardly carry on much longer unless it can either raise the general standard of its work, or confine its exhibition to one room instead of filling three large rooms with such very ordinary products as form the mass of the collection.

THE front sheet of the *Times* of Wednesday last contains, we regret to see, an advertisement from an architect of some ability, and whose name is not unknown to us, touting in the most barefaced way for professional work. The following is the advertisement (omitting the names, as we are not going to assist this gentleman in his advertising propensities):—

"LIMITED OWNERS' RESIDENCES, Acts 1870, 1871—Board of Agriculture.—Noblemen and landed proprietors desirous of taking advantage of the facilities afforded by the above Acts for making improvements may consult Mr. ——, Architect, who rebuilt ——hall and other country houses."

The full address follows. The advertiser is not a member of the Institute of Architects, or he would probably hear from that body. But it is a most discreditable thing to the profession that an architect should thus lower himself to the level of a quack medicine vendor, and we hope the architect who has thus disgraced the profession will get nothing but contempt by his tactics.

THE TREATMENT OF ANGLES AND TERMINAL FEATURES.*

To go back for a moment—there is an early development of the angle pier that is exceeding effective: namely, the development into the kind of shallow buttress which is sometimes found enveloping the entire angle in Early Gothic buildings. It makes an exceedingly strong and satisfactory feature. The feature which we generally mean when we speak of an angle buttress—that invention of the late and scientific Gothic period for saving a buttress—is rather an abomination. It looks so terribly mean and poor.

When angle piers were used alone in Gothic times,—that is without buttresses,—they were generally octagonal in form, and surmounted, or intended to be surmounted, by pinnacles. For good examples, I need only point to the towers of Magdalen College at Oxford, and to Giotto's campanile at Florence.

In Renaissance architecture, again, angles were more frequently finished,—at least in important works,—with piers, of one form or another, than with any other feature. Sometimes these piers are of considerable projection, and stop the majority of the architectural features, the main cornice alone breaking round them,—as in the "Mercato Nuovo" and the Church of the Annunciata at Florence. But as a rule the pier is of slight projection, and all the horizontal features are carried round it, except the upper part of the main cornice, under the corona of which it stops. The piers are treated in a variety of ways; sometimes they are pannelled; sometimes only broken by niches; more frequently they are rusticated or broken up into groups of pilasters. Strange to say, a rusticated pier does not seem to destroy the scale of a design in the same way that rusticated quoins do; probably because it is evidently a separate feature. Such piers may be seen in many Italian palaces, as well as in France and England, where Petrault, Mansard, and Sir Charles Barry, in particular, used them with singularly satisfactory effect. One may point out, with respect to these piers, that they gain, like most other angle features, by being a little set in from the actual corner.

Piers treated as regular pilasters with caps and bases generally look out of place if there is nothing to suggest the pilaster-form in the rest of the design; but their use was quite common in such cases. On the other hand, at the end of a façade in which pilasters or columns are introduced, a pilaster or a group of pilasters forms the natural and most satisfactory angle. A pilaster placed absolutely upon the angle is to be avoided; not only because it is not strong enough alone, but also, and chiefly, because when both sides of the angle are seen, it looks clumsy and ill-proportioned. For the latter reason the common and obvious expedient of coupled pilasters is also unsatisfactory if they are set right upon the angle; but if they are set in, so that the angle shows, or even if the outer one of each couple only just meets the other, without their becoming two sides of the same; then the objection falls to the ground. It is an interesting, and not an easy exercise, to design a group of pilasters, or pilasters and columns to terminate a façade and get happily round the corner. The chief things to avoid, besides weakness, are columns or pilasters actually at the angles and any excessive projection of the cornice. If the latter is a great cornicione supported on consoles, the trouble with it, unless you are very careful, is apt to be a constructive as much as an æsthetic one.

I cannot leave the subject of the smaller angle features without a passing reference to the twisted-cord moulding sometimes used in Egyptian and in Venetian buildings. It no doubt marks the angle well enough, but it has a quite intolerable resemblance to an upholsterer's cording on the cushions of a chair or couch, and is entirely beneath notice as an architectural feature in such a position. There is not the same objection to the roll-moulding that one often finds on the angles of early Gothic buildings, especially on the buttresses. The roll is cut into the solid angle, and not stuck on outside it, and it gives some fine, sharp lines of shadow. If only it were easier to run the roll right out at the top, or in some way get rid of the disagreeable effect produced by its being stopped short, I think we should all take to using it again now. A chamfer on the angle of any important feature is seldom or never an improvement; it weakens the line, and destroys its sharpness without giving any sort of compensation.

The larger angle features may all, for convenience, be grouped under the heads of turrets and pavilions. Angle pavilions are an invention of Renaissance architects; while turrets, though they continued to be used in the later period, are an essentially Gothic feature. It is noticeable that angle pavilions, as elements in a composition, are, more often than not, made subordinate to a larger feature of the same kind which occupies the middle of the main face of the building; while angle turrets more generally terminate façades or faces which have no very large or prominent central feature. Neither rule is without very numerous exceptions, but the distinction holds good in the majority of cases. It is also noticeable that turrets are not such effective terminal features for long façades as for short ones, unless they have almost the proportions of pavilions. This is only natural; the longer building requires a wider terminal feature.

With respect to circular and polygonal turrets on the angles of buildings, it is a common fault, with inexperienced designers, to put the centre of the circle, or polygon, actually on the angle. It is natural enough, but a little observation and experience teaches us that it is fatal as regards effect. The centre should be well within the angle, and it does not much matter how far within as long as the angle does not come out beyond the turret. This is a matter to be particularly noted in the case of turrets carried on corbels, like many of those in the chateaux of the Loire district, as well as the little turrets on the angles of some of the Scotch castles. The same observation, of course, applies to circular and polygonal bays and oriels on angles, if people must have such things; and there seems just now to be a taste for them. With respect, however, to such angle bays, I have ceased to believe it possible to design one that can be tolerated, unless it is carried up to the roof, and made more or less into a turret. It may be an oriel, carried on corbels, it need not start from the bottom, but it *must* go to the top. The reason is obvious. It is a fundamental principle that the angle must appear strong, and that is impossible if it seems to be carried on the roof of a bay-window, or upon a cunningly-contrived, but inadequate, pier in the middle of the outer face of the bay.

Before leaving the subject of turrets, there is a word or two to be said about towers. Large towers have, rather commonly in modern buildings, been used at angles. But there is this objection to them in that position. Anything that can be called a tower must be a very large and prominent feature; certainly it will overtop any building to which it is attached. It is, therefore, ridiculous to put it at the extreme corner of a composition where, from most points of view, it makes the group altogether one-sided, and from the most favourable point overwhelms the rest of the building. Of course, if there are other towers in the group it is a different matter; I am thinking of a single tower, which is the most that the majority of us are likely to have to deal with at present.

Something remains to be said about rounded corners and angles that have to be cut off for convenience at the corners of streets, and so on. They may be taken together; for the principles involved in dealing with them are practically identical. They present a peculiarly difficult and dangerous problem to the architect, who, if he has any proper ambition, is sure to see in them his opportunity for doing something original and effective. The problem, too, is generally complicated by the temptation—sometimes it is the necessity—to put an entrance in the angle. But all openings in or near angles must weaken them; and an important opening in a curved surface is a horrible thing to deal with—the head of it *must* overhang. These difficulties are, unhappily, seldom overcome with any sort of success. In nineteen cases out of twenty the attempt at an original feature results in some tall and consumptive, or grotesque, piece of confectioner's architecture, much too weak for it position, yet running up like the funnel of an old-fashioned steam-engine, and giving something of the effect of such a machine to the whole building.

As to the entrance, the natural and unavoidable weakness of the opening is too often aggravated by making it arched or by surrounding it with light ornament. The best way to deal with these rounded and canted angles is, I feel sure, to treat them, not as angles at all, but as short fronts with the angle features on each side of them. If the special feature is inevitable, it should be made to stand firmly, as a well proportioned feature of itself, having but little connexion with the rest of the building, which should be finished with its own terminal features on each side of it.

I had intended to deal with internal angles, but the paper is already so long that I will only stop to point out that where two long wings of a building meet and form an internal angle,—two sides of a courtyard as it were,—a marked feature in the angle is an imperative necessity, and is usually supplied by a turret, sometimes by a tower.

In the discussion which followed,

Mr. H. O. Cresswell proposed a vote of thanks to Mr. Baggallay for his admirable paper. Mr. Baggallay had drawn attention to a feature which was constantly forced upon the attention in walking about London, viz, the angle tower, which those who were the happy possessors of corner sites thought it their duty to erect. The angle tower, with its semicircular arches, or even with straight openings, had a tendency to be weak. With circular arches, in fact, it looked as if coming down to crush the spectator, were it not for the friendly girder which was generally behind. He did not know whether any of the worthy City practitioners who designed those angle-towers ever read the discussions at the Association meetings, but, if so, perhaps, in future they would be somewhat more sparing in their use.

Mr. W. Burrell seconded the vote of thanks, and said that when they were able to read the paper, and consider its points bit by bit, they might then take up the books descriptive of the old works, and study how things were done

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* By Mr. F. T. Baggallay, F.R.I.B.A., and being the concluding portion of a paper read before the Architectural Association on the 1st inst. (See p. 333.)

in the old days, as compared with the present. Such a paper as they had listened to that evening had more than an ephemeral interest, and it was of the utmost importance for the young architect to get these subjects well into his head.

Mr. F. R. Farrow remarked that Mr. Baggallay had taken up the subject pretty fully as far as the limits of the paper would allow, and there was little to be said in addition. There was one point, however, which had been referred to, and which was sometimes open to explanation, viz., the plan of circular turrets at the angles. Although the general rule with the best work was for the centre of the circle to be within the angle, it would be found occasionally in Scotch work, and with small turrets especially, that the centre of the circle was outside the angle. That had certainly a most unpleasant effect. There was a method of treatment which had not been mentioned, but which was to be found in the Venetian treatment of the *façade*, and perhaps might be taken as bearing upon the subject of angles. He referred to the treatment of the whole angle-bay of the *façade* in a more substantial and stronger manner than in the centre of the *façade*. It appeared to be peculiar to the Renaissance designers, and he had always immensely admired it. It seemed to be a very sensible way of treating the angle of the design, to make not only the bare angle, but the pavilion or block at the angle, more substantial than the centre part of the *façade*. He was gratified to hear what had been said as to the pleasing effect of an occasional rounded angle. He had seen a modern French building lately, and he noticed that the angle to the tower was simply rounded at the arris for the sake of rounding it. In doing so the designer had furthermore rusticated his angle, so that this rounded and rusticated pier at the angle had a most piquant effect.

The Chairman remarked that he quite agreed with what Mr. Farrow had said about rounding angles. It was unnecessary to go to Paris to see that, as it had been done in several places in London. In the case of Mr. McWhirter's house in Abbey-road, there were rounded angles executed in rough-cast, and the strings all round looked nice and soft. The angle should be designed according to the building, for a turret that would look all right on a three-story building looked quite ridiculous when drawn out to seven or eight stories. He would also like to emphasise another thing Mr. Baggallay had pointed out, viz., that when designing an angle, which of necessity was usually seen on the diagonal, care should be taken to design it on the diagonal as well as on the elevation. He might instance towers and spires as cases in which blunders were frequently made, because they were designed in elevation only. Both sides of a tower might be carefully-designed and might look fairly well when seen in elevation, but when they were viewed on the diagonal the little turrets would be found to be a long way off on each side, with the spire coming up the middle. Those who used pilasters in interiors must bear Mr. Baggallay's remarks very clearly in mind when they come to angles, for as to the pilasters in an internal angle, it was difficult to manage it. He did not know, in fact, which was the best way to use it, but he was aware that there were a great many bad ways of using it, which should be carefully avoided. Mr. Baggallay had divided up angles into three groups of treatment. The first practically came to this—"leave them alone," and he (the Chairman) could not help thinking that, unless they were driven to it, they could not go wrong in leaving the angle alone. In putting up buttresses, pinnacles, and turrets they would frequently come to grief, but a plain, solid angle, with the windows kept well away from it, would, in nine cases out of ten, look well. A frequent mistake occurred in putting windows near an angle. If they got two windows near an angle, they could see through the building, and the effect was unsatisfactory, but if the windows were kept well away from the angle the effect would be better. Mr. Farrow had pointed out that sometimes circular turrets had their centre outside the angle of the building. That was true, but even Mr. Farrow had admitted that the effect was, as a rule, unsatisfactory. If, therefore, they had a turret to deal with, they would, he believed, be pretty safe in keeping the centre inside the angle. There were many good examples of the treatment of angle turrets, and that of Mr. Norman Shaw at the building at the corner of St. James's-street and Pall-mall, was excellent. Everything depended on the position of the angle. He also agreed with Mr. Baggallay that a single angle buttress put in the diagonal was not easy to treat well. It was, as a rule, unsatisfactory because made too thin. There was some chance of success if it was kept broad, but a 9-in. buttress put on the diagonal would most likely bring disgrace upon the designer.

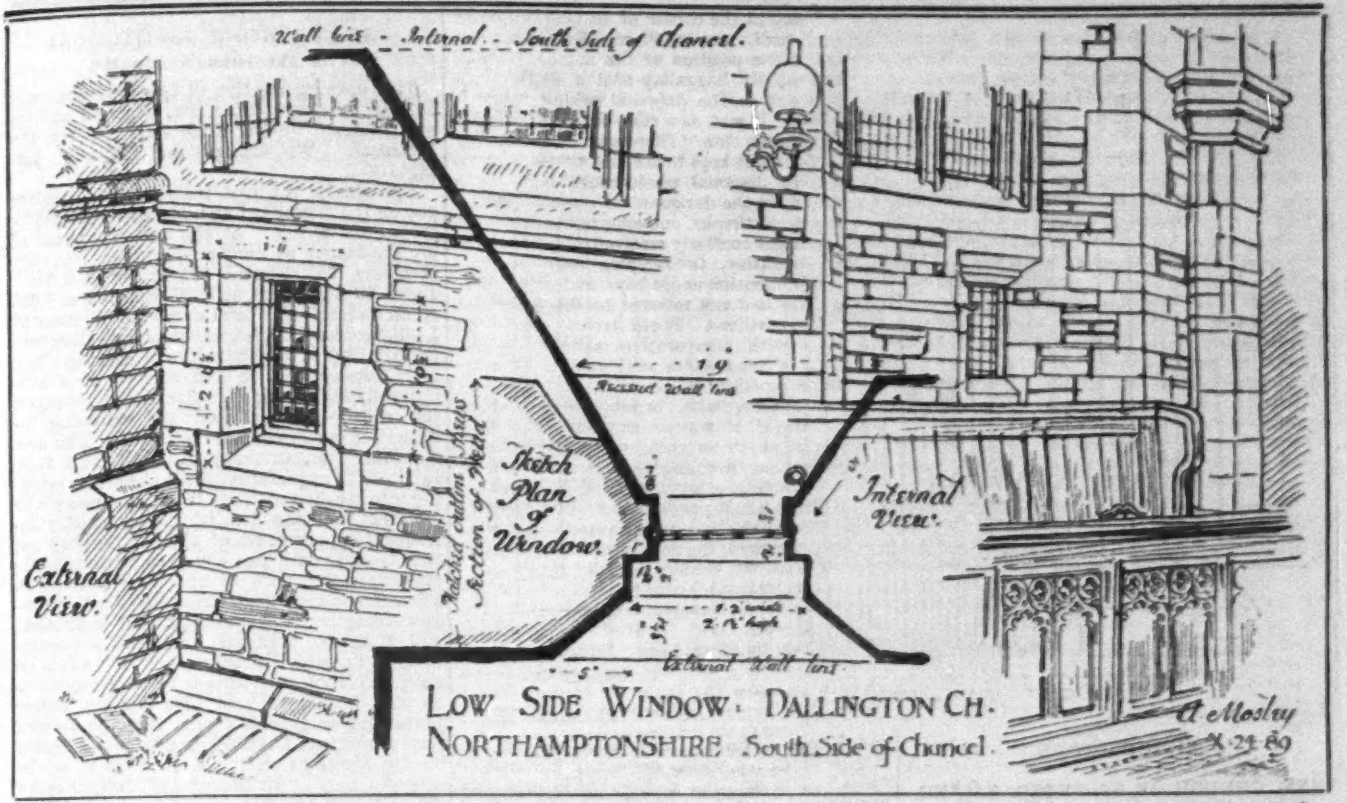
The vote of thanks, on being put to the meeting, was most cordially received.

Mr. Baggallay, in replying, said he had omitted to mention angle-bays, and, as a matter of fact, he had not referred to the treatment of angle-pavilions. These latter should be designed with comparative solidity. Good examples of Renaissance work generally showed the angle-pavilion as set with a single light in the middle, with broad piers on each side, while if it was at the end of a composition in which an order was used, it would be found that the angles were treated with coupled columns, or with a column and pilaster, to make the whole pavilion more solid than the rest of the work; and in the same way, as Mr. Farrow remarked, the end bay of the building was treated in Venice. He supposed there were special reasons for the treatment of the bay like a pavilion in Venetian buildings. No doubt very stringent laws existed as to going beyond the building lines. Sites must have been exceedingly valuable, and so they were obliged to make the buildings square. They could not, therefore, allow anything to project in front to make an angle-pavilion, and consequently had to treat the end bay as one. With regard to the other point Mr. Farrow had raised, as to the little oriels, which occasionally had their centres outside the walls, he need only repeat that Mr. Farrow did not approve of them, and therefore they could not be deemed as going against his (the speaker's) theory, that the centre of the angle should be within. He had rather hoped that a greater number of the members would have spoken, for all he had said was, after all, very much matter of opinion, and he had put it forward with a certain amount of hesitation. Questions of taste were not on quite the same footing with scientific questions, and opinions upon them were always open to discussion.

THE RECENT ART CONGRESS AT EDINBURGH:

THE PRESIDENTIAL ADDRESS IN THE SECTION OF PAINTING.

Mr. Briton Riviere, R.A., presided at the opening meeting of the Section of Painting, and delivered an address, in the course of which he said he was there as a painter to speak to those who did not paint, so that he might, if possible, bring them, at all events on a few points, into touch with those who did. More especially he wished to explain the relation which the language held to the message it contained; for that a painter had a message—his own peculiar message—to whatever class or order his work belonged, he took for granted, or how should they distinguish him from a living photographic camera? Among painters technical excellence was of paramount importance. They spent their lives in trying to acquire it; they broke their hearts over the failure to do so; and the result was that they naturally looked at works of art from a very different standpoint to that of the untrained. To them, as mere experts, a work would be strong or weak in the ratio of its excellence of manner. To the ordinary outsider, the matter would always be of primary importance. The former said, "How is it done?" the latter, "What does it mean?" Now, it was easy to see that this disagreement rested upon very solid grounds, and that each point of view was the result of a very definite cause. They were interested to know whether it was possible to bring those two points of view into agreement to enable the outsider to absorb something of the expert's knowledge, and yet preserve his own individuality as an outsider, and love a work of art intelligently, and, above all, honestly. Could an outsider,—*i.e.*, one who had no practical training in painting,—learn to thoroughly enjoy a picture both for its manner and its matter? If this was possible, how could it be brought about? In the attempt to create a truly receptive and sensitive art public, it was of the highest importance to begin in the right way. He believed the right way to begin was to start, not from the point of view of the painter, but from that of the outsider. In this manner, they should follow the only sound method of education,—viz., that from the known to the unknown. The shibboleth, "art for its own sake," used with such intense belief by some who had devoted their lives to art, must be quite unintelligible when uttered to the outside art public on such a campaign as the present. Now, it must never be forgotten that painting is a language. Every work of art must be the expression of an idea, whether the idea be abstract or concrete; and this equally applied to purely decorative art, of which the main object was to express beauty—for beauty, in some one form or another, would be a constantly recurring idea, or the work could not be decorative. In the art of painting they must never lose sight of this principle, and the picture would be good as a work of art according to the manner in which the idea it expressed, and the value of the idea it expresses. One of the great difficulties of their art was that the language in which the idea was expressed was necessarily so important, and in the hands of a master of it was sometimes so powerful, that the idea was forgotten, and the mere expression of it stood out as the successful end and aim of painting. Nevertheless, it had been found in the past, and he did not believe the future of art would reverse it, that the idea,—the motive,—the mental force and intention of the artist and his idiosyncrasy must be interwoven with and over-ride the mere expression of language in any work which had art enough in it to make it live. And this, he believed, held true in all the walks of painting, whether the work be portraiture, historical, domestic, landscape, or decorative. Now, in painting there was, and ever would be, a never-ending struggle between two extremes,—realism on the one hand, and idealism on the other. A perfect union and balance of the expression,—the language on the one side, and the idea on the other,—might be called the mean. National temperament, as well as the idiosyncrasy of the painter, would go far to decide towards which extreme he would lean, and the bent and spirit of the age in which he lived would do the rest. For if painting was a language, and expressed the ideas of the painter, it must necessarily express those of the age which had produced him. Now, two questions presented themselves. First, What is the predominating force of this age? Secondly, Is it one calculated to help or retard the cause of art? It was easy to answer the first. Whatever might have been done in other lines of human energy during the Victorian age, there could be no question that its most remarkable achievements, both theoretical and practical, had been those of science. The art of the painter had not escaped its influence. On one side, and a very important one—that of realism—the aids which furnished the language, *i.e.*, the signs and symbols to express the idea of the artist, there was a wide front open to the influence of science; and on that side art had not been slow or unwilling to follow the advice of science, or ungrateful for the valuable help it had afforded. They would now try to answer the second question. Would this influence help or retard the cause of art? His answer was,—that it might do either according to the manner in which it was received and used by the artist. If a painter resolutely held the belief that painting was a language and a work of art,—the expression of an idea,—and used science, and all that it had discovered and taught, to enable him better to understand its signs and symbols, viz., the material facts of nature, so that by means of them he might express himself correctly, then the cause of art would be much advanced by science, and work produced under its influence would be stronger and richer than they could possibly have been without it. On the other hand, if the painter allowed this scientific knowledge of the material or realistic part of his work to obscure the purely artistic and ideal part of it, to obscure instead of intensify the idea; and if, carried away by the material wonders of the "thing" which science had unfolded, he forgot the thought altogether, then, assuredly, however true he might have shown himself to be to the cause of science, that of art would suffer at his hands,—indeed, might be lost altogether. For he felt sure that most of his brother-artists would agree with him that it was possible for a picture to be scientifically true and have no art at all in it, and, on the other


Wall line - Internal - South Side of Chancel.
Sketch Plan of Window.
Internal View.
External View.
External Wall line
LOW SIDE WINDOW · DALLINGTON CH.
NORTHAMPTONSHIRE South Side of Chancel.
A Mosley
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hand, to contain several scientific blunders and yet be a great work of art. The simple narrative of a fact *per se* would not constitute a work of art any more than a photograph could be considered a work of art, and for the same reason,—viz., the material constituents of both were absolutely impersonal; and it was the personality of the artist, the impress on the work of the artist's own mind and intention, adequately expressed, which gave the art. Mr. Rivière went on to consider what were the chief influences in the world of art which regulated and checked this powerful scientific factor, and to consider their chances of holding the balance against it. But before discussing them they might perhaps spend a few moments to consider the kind of work which would be produced without them, and how far it would go to satisfy the art-craving of man. Realism in one form or another must be the outcome of a purely scientific impulse, and whatever its form, and however dissimilar the methods of its different schools might be, its single aim must be to register accurately the external aspects of things as they appeared when scientifically observed. There was a realism so wonderful that it arrested their attention, and for the moment paralysed the imagination. It was so complete in itself that it seemed almost a finality, and to the painter, at least, who had spent so many years in striving to attain some part of the manual dexterity necessary to produce such a result, this kind of materialism was indeed fascinating and astonishing; though even on him its influence might not be permanent. But mere realism, however wonderful, would never give entirely adequate food to those who, without special technical knowledge of painting, were anxious to receive and enjoy whatever there was in art that their own natures were able to assimilate. To them mere realism could never prove sufficient, because it would only satisfy a part, and that the smallest part, of their craving. Those unskilled lovers of art would, in nine cases out of ten, be the more imaginative of their fellow-countrymen, and they would be interested in art, because in it they hoped to find food for their imagination. Goethe says, "For what is the real in itself? We take delight in it when it is represented with truth,—nay, it may give us a clearer knowledge of certain things, but the gain to our higher nature lies alone in the ideal, which proceeds from the heart of the poet." Mere realism could never be this; the more complete it was, the less it could be so. It was by no means the most realistically perfect work which excited the imagination. A few lines, a few colours, would often set the mind travelling when a piece of finished realism only confined it to a point, and that perhaps a narrow one. Was it not an inseparable property of the highest order of work that it should excite imagination in the beholder; that it should not only give, but also promise more; that it should be suggestive? Where, in this capacity to stir the imagination, was the finished statue which could stand beside the fragment? or the complete building which could match the ruin? From this point of view mere realism could never give them all that they wanted. But what should they say on the score of beauty, without which art worthy of the name could hardly be said to exist? Would mere material realism give them this? Would the scientific method of observing nature and the scientic bias of the age give painters any help in their search for it? Could a faithful narrative of natural phenomena ever give them more than accidental and detached scraps of beauty? But of that beauty which was essential in its character, and could only be evolved by selection and the clearest artistic insight and experience,—that beauty which was the result of patient and persistent elimination of all that was unnecessary and crude,—of beauty of such a kind how much will mere material realism give them, when it is obliged to busy itself quite as much with what was crude and unnecessary? This brought them naturally to the forces which were required to counteract and regulate the purely scientific influences on art and supplement mere realism. These forces, broadly speaking, were idealism and tradition. In connexion with the first he noted with regard to the heroic periods of art-history this remarkable fact, that they were as strong on the actual as they were on the imaginative side of art, and that not only was their ideal art excellent, but that their mere technical work was also excellent. The dignity and power of a thought would generally give clearness and symmetry to the expression of it, and the painter who felt strongly would seldom express himself weakly. Discoursing on tradition he showed how one art-period influenced that which succeeded it, and argued that a standard of historical excellence in art must not only be of abiding value to counteract any momentary influence or fashion of a particular period, but there it was, perhaps, the only means by which any kind of art-standard of a universal, and not merely national character, *i.e.*, the outcome of certain accident of race or climate, could ever be evolved. In concluding, he said that the cultivated and intelligent section of the art public was less likely to err in its judgment of pictures if it relied on its imagination than if it relied on its knowledge. If this section of the public relied only on its knowledge, in nine cases out of ten it would be brought face to face with the fact that it had had no special training in a technical art so difficult that many painters, after a lifetime spent in grappling with it, were compelled ruefully to acknowledge to themselves that painters, in the true sense of the word, they should never be. On the other hand, there were qualities, some of them inborn, and others the product of a kind of culture open to all well-educated people, which would not only help the possessor of them to appreciate a good work of art, but without which some, and those not the least important properties of every good work of art, could not be truly estimated or appreciated at all. Beauty, in its widest sense, grandeur, impressiveness, fitness, and, above all, sincerity,—these, embodied in a concrete form, were within the province of painting, and without many or all of these qualities a painting would never be really good. Catholicity of taste in its widest form was what they wanted to cultivate in those outside their painting class; the receptive, not the creative world of art. The wider the range of sympathy, the wider would be the range of pleasure and profit derived. If any of the work of this Victorian age was destined, as they hoped, to be a permanent link in the great chain of art-history, he dared venture to prophesy so far as to name the chief characteristics of that work, by whomsoever it was done, of whatever class or order of painting it might be, and to whatever school it might belong. He believed, in the first place, that it would be perfectly sincere work,—the outcome of what the artist really believed was what he wanted to do, and must do, whether his contemporaries believed in it or not. Secondly, he believed that it would be work in which the realism, however admirable it might be, was used not only for its own sake, but as a language in which to express the mind of the painter, in which the real should be so leavened with the ideal that the picture was never a mere transcript, but a translation of Nature,—in short, the expression of an idea. Finally, he believed that, however apparently revolutionary its aims, and however original, and even eccentric, some of its methods might appear, it would, in the main, be in harmony with and founded upon the great art-traditions of the past.

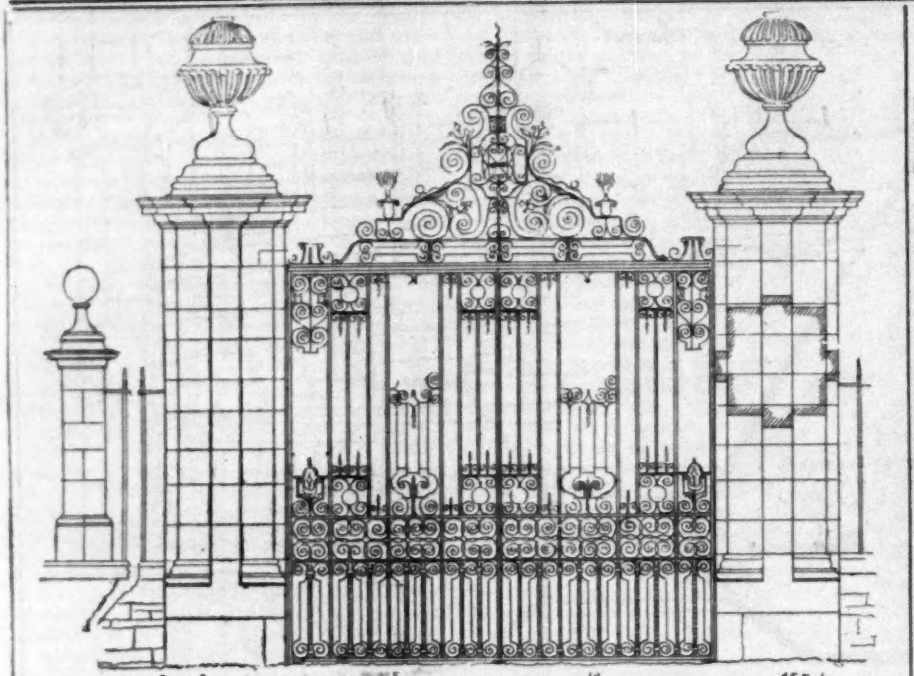
LOW SIDE WINDOW, DALLINGTON, NORTHAMPTONSHIRE.

This window is situate in the south side of chancel,—close by respond pier receiving the chancel arch. Over it is a modern window. An iron hook, which probably received the hinge of the original door, still remains, and is indicated on the sketch plan.

A. Mosley.

St. Saviour's, Southwark.—The Bishop of Rochester presided on Tuesday over a meeting convened to inaugurate the work of restoring this church. The scheme will cost 35,000*l.*

PHOTO-LITHO. SPRAGUE & CO. 22, MARTIN'S LANE, CANNON ST. LONDON, E.C.



GATEWAY, LOWER LYPIATT HOUSE

Illustrations.

NEW CHURCH OF ST. PETER, EALING.

WE give a reproduction of the exterior and interior views of the design made for this church by Mr. J. D. Sedding, in an anonymous competition, into which, however, only three architects appear to have entered. Mr. Sedding's very picturesque and original design was formally accepted by the Committee a few days since, and is, we presume, to be carried out.

The plan and interior view, taken together, will show the reader the characteristic and original arrangement of the nave piers and arches. The effect of the heavy plain tie-beams across the springing of the roof we confess we do not admire, and we wish Mr. Sedding would reconsider the matter and dispense with them, which it is certainly possible to do; they spoil a fine interior.

In the plan it will be seen that all exits are from the ends of transepts and nave, with no side entrance to the nave. It is proposed that the school-children should occupy the south transept, and have the door into it for their special use, so as not to disturb the congregation.

A curious feature in the decorative design is the introduction of the four heart-shapes into the tracery of the circular end window, as will be seen in the interior view.

As to the estimated cost and proposed materials we have no details at present.

BRASS OF ROGER THORNTON (1429): ALL SAINTS', NEWCASTLE-ON-TYNE.

THIS brass was originally on an altar-tomb. It is now placed on the vestry wall.

It consists of the figures of Roger Thornton and wife under a super-canopy in two tiers, the lower of which shows the soul held by angels in a cloth, and in the upper there is seen the soul placed on the lap of the Divine Personage. On either side, and also between the principal figures, are canopied niches, containing the figures of various saints, with their emblems. On the side next to the inscription are small canopied niches containing figures in the habits of monks. An inscription runs round the outer edge, shields of arms being placed at the centre of either end and side of it. The Evangelistic symbols are at the corners.

The illustration is from a rubbing by Mr. Andrew Oliver, who has made a special study of brasses; the original formed one of the illustrations to a paper on the subject read by him on Tuesday last before the St. Albans Archæological Society.

ARCHITECTURE ABOUT THE GOLDEN VALLEY, GLOUCESTERSHIRE.—III.

EAST of Stroud is a lofty range of hills descending abruptly to Todsmoor on the further side. On this ridge are Lower, Middle, and Upper Lypiatt. The latter adjoins the village of Bisley, where are many picturesque "bits." The mansion is new, but incorporates portions of an old house of some importance and historical interest. Middle Lypiatt is evidently,—from its likeness to other dated specimens,—of the latter half of the seventeenth century. The whole collection of farm-houses, outhouses, stables, cottages, &c., seem to be of the same date, and may be commended to any student wishing for a plan of a homestead of that period.

Lower Lypiatt is a house of considerable interest, a paper on which was lately read by Mr. C. Wethered, of Stroud. It was built by Chas. Coxe, a Welsh Judge, about 1690. It is a curious square house, of prim form. The front and back windows have sash-frames, but at the sides the windows have transoms.

The house is only partly inhabited, and is falling to ruin, and would be an excellent home for a ghost. There are some interesting remains of embroidered hangings and other things; but visitors are not welcomed. The porch is a very beautiful piece of delicate Classic work, remarkable also for the absolute preservation of the stone, although exposed to the full blast of the western wind.

There is a courtyard in front, closed in with a handsome screen of stone piers and iron railings, and a splendid pair of wrought-iron gates,—alas! fast going to ruin. A sketch of these is subjoined. The story is, that the Judge reprieved from death a certain blacksmith, on condition that he made the gates; but it is evident that the house and its belongings were the work of no mean architect. In the wood adjoining this house is an obelisk, of the date of the house, to the memory of a horse who died at the age of forty. The view from the top of this house, or from the Limekilns, a little further, is as beautiful as anything in England.

The house in Stroud is dated 1686. The oval window in the gable retains, as is rare, its original lead-glazing. The king's arms is another variety of a form of which I have already given several examples.

Hazleton is a large farm settlement, standing in an isolated position on the site of an old Benedictine priory. The very fine old barn of the priory remains, with an inscription of the twelfth or thirteenth century. The doorway to the house is of good character, and I propose to give a measured drawing of it.

Frampton Mansell manor-house has an orderly stone front, with a bold cornice of stone curiously finished at the two ends.

RALPH NEVILL.

Editorial Correspondence.—The Editor of this journal begs to intimate that he cannot undertake to attend to correspondence in connexion with the business of the paper which is sent to him at any other than the proper address—viz., the Office of the *Builder*. All communications should be addressed there, and not to any private address.

THE SURVEYORS' INSTITUTION: THE PRESIDENT'S ADDRESS.

THE opening meeting of this Institution was held on Monday evening last, when an address was delivered by Mr. Elias Pitts Squarey, the President. We extract the following passages:—

Let me, in the first instance, congratulate you on the continued and advancing prosperity of our Institution. At the commencement of my Presidency we numbered fourteen Honorary Members, 784 Fellows, 333 Professional Associates, 90 Associates, and 102 Students, or 1,323 of all classes. The total number now stands at 1,448, besides a large number of new Members (nearly 100) in various stages of election. Nor is it unreasonable to look forward to a continuously-increasing accession, consequent upon the widely-extended and yet extending influence of our Provincial Committees. This new departure has, in many districts, more than fulfilled the expectation of the Council in bringing into relation with our Institution many who (resident in distant localities, with possibly infrequent opportunities of visiting London) are thus brought into immediate and sympathetic communication with us and with each other. The extension of these Committees will, doubtless, strengthen and consolidate our Institution, will widen its influence, will tend to disseminate its valuable literature, and will afford an increased area of selection for representatives on the Council. I may also mention, before proceeding to general topics, that the Council have authorised the holding of a few so-called Junior Meetings during each Session, to be attended only by Examiners and Students under thirty-two years of age. It is believed that meetings of the kind can hardly fail to be useful in training the younger Members in literary habits, and in cultivating the power of speaking in public. . . .

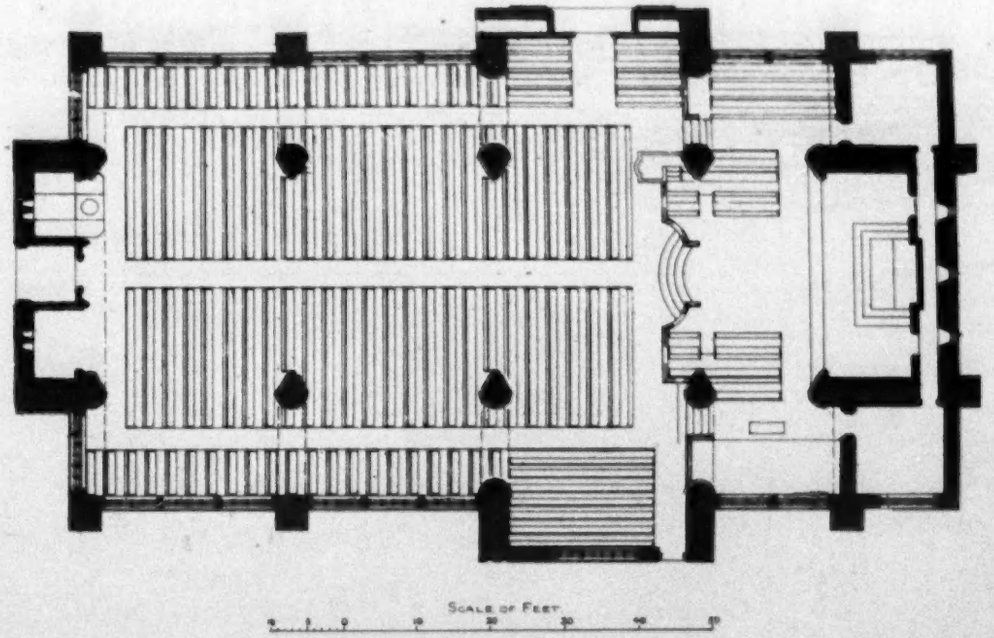
The legislation of the past Session is of considerable interest. Among the Acts which received the Royal Assent, the Board of Agriculture Act is most acceptable, and likely to be most eminently useful in all matters relating to land. Clothed with the powers of the Privy Council under the "Contagious Diseases (Animals) Act," it undertakes the various and comprehensive duties of the Land Commission, so courteously and ably fulfilled by our Honorary Members, Sir James Caird and Col. Leach, together with the authority and responsibilities of the Commissioners of Her Majesty's Works and Public Buildings under the Survey Act of 1870; the collection and preparation of statistics relating to agriculture and forestry; the inspection of schools, in which technical instruction is given in agriculture or foresty, and overlooking the examinations incident thereto, and the making of such research and experiments as may be thought important for the advancement of agriculture and forestry. The new Board will happily constitute an office from which information and advice upon every matter connectedwith land, with agriculture, and the varied interests relating thereto will be afforded. . . . At last, too, a status is given to education in forestry. It is remarkable that the United Kingdom, producing, probably, as fine and valuable timber as any part of the world, should have afforded no means of education in the direction of home forestry. Arising out of this Act, the Council of the Institution have prepared a complete system of Special Examination in this subject, as well as in Sanitary Science and in Land Surveying and Levelling. These Special Examinations, which are confined to Members of the Institution, are likely to be of great service to young practitioners, to whom a new opening of usefulness and advancement is thus furnished. . . .

The Arbitration Act is of abundant interest to this Institution. Brought in by the Attorney-General whose wide yet technical experience in all matters connected with arbitrations enables him specially to deal most capably with these matters, this Act repeals portions of the Common Law Procedure Act, 1854, and other Acts relating to arbitration, makes the submission irrevocable, unless the contrary intention is expressed, or by an order of a judge, and gives to it the effect of an order of the court. Certain provisions set out in the schedule are to be implied in all submissions to arbitration, in the absence of any stipulation to the contrary. These provisions would seem to relate to the appointment of arbitrators, the time for making awards, the power to call and examine witnesses on oath in matters incident to the reference

PROPOSED CHURCH OF

S. PETER, EALING.

Mr J.D. Sedding, F.R.I.B.A. Architect.



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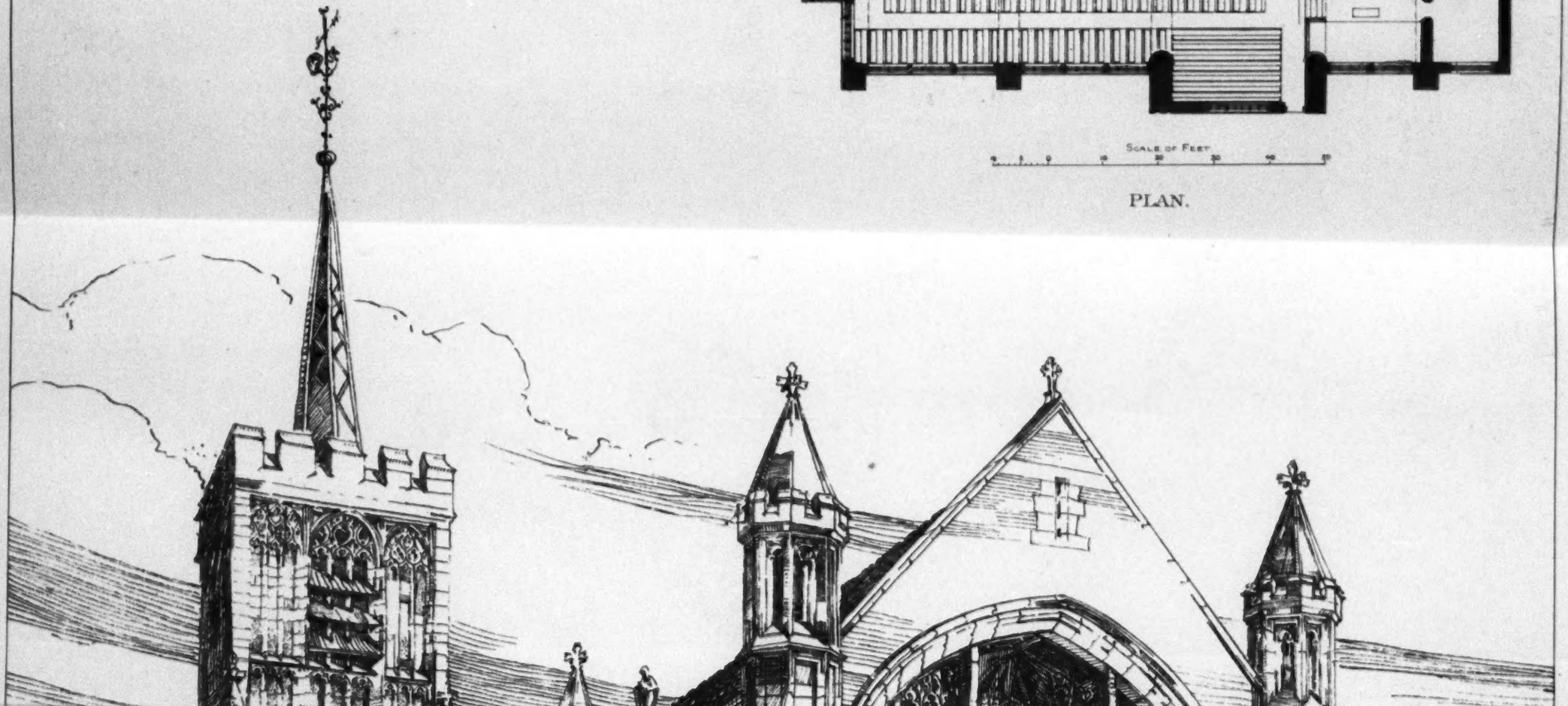


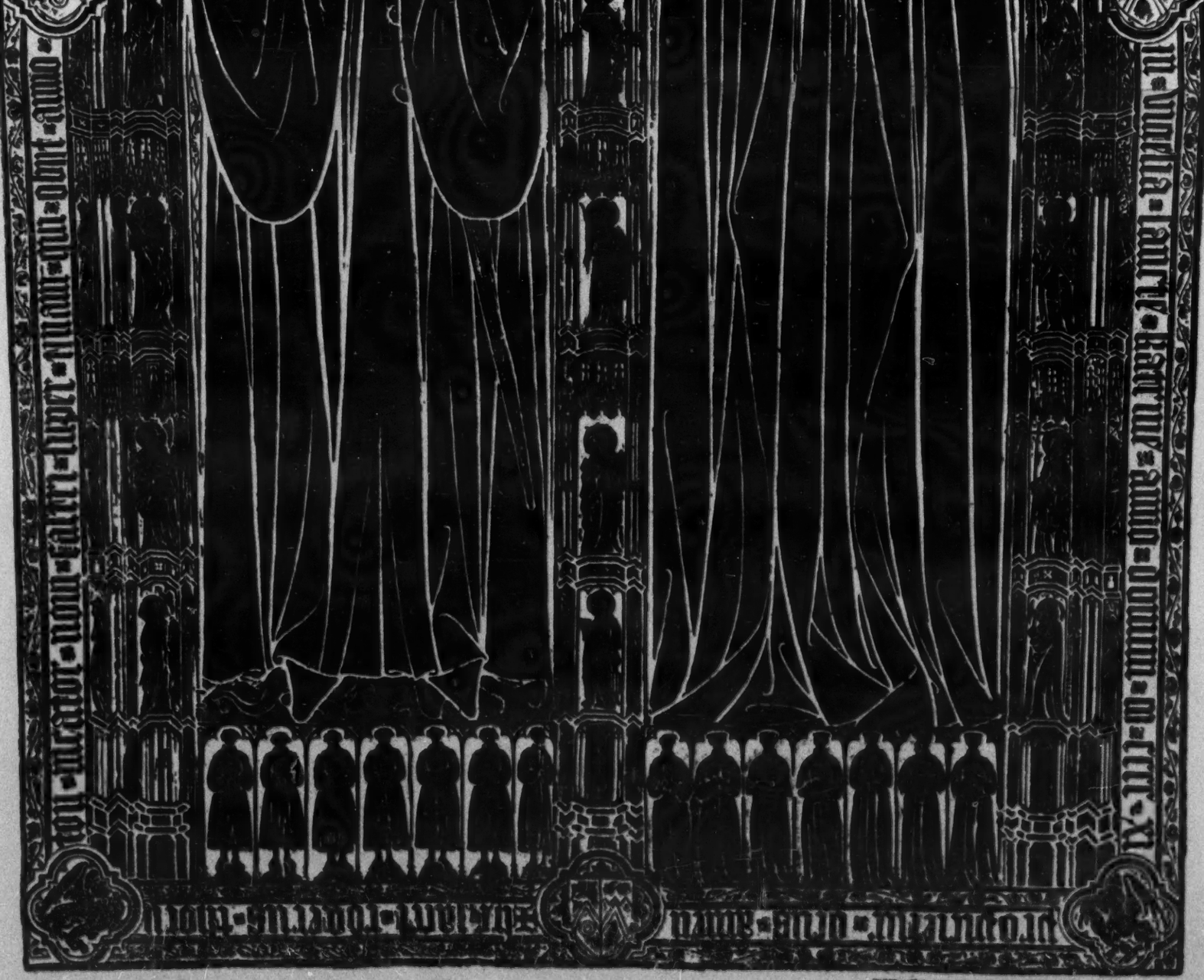
PHOTO-LITHO SPRAGUE & Co 35 MARTINS LANE CANNON ST LONDON E.C.

PROPOSED CH of S. PETER EALING.

Mr J. D. Sedding, F.R.I.B.A. Architect.

PHOTO-LITHO. SPRAGUE & Co. 93, MARTINS LANE, CANNON ST., LONDON, E.C.

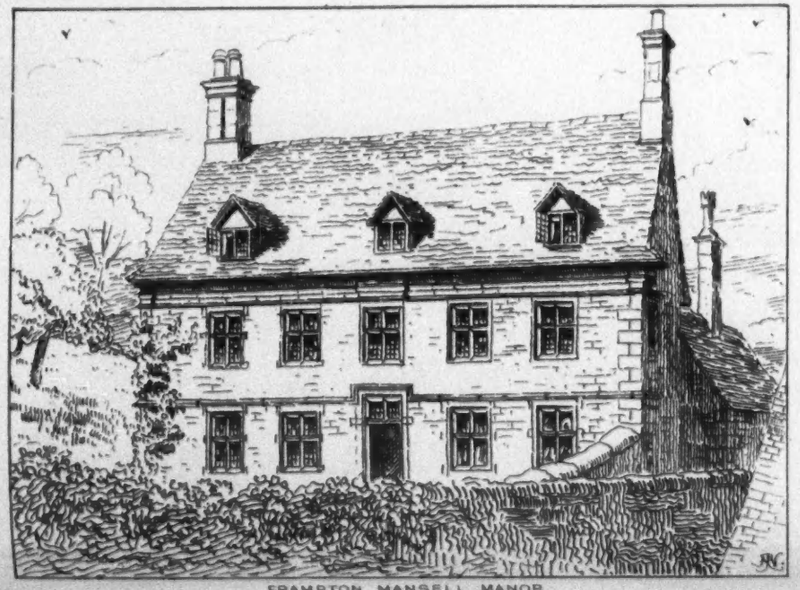
Hic iacet Johanna
quondam uxor Johannis de Cobham
Elizabeth filia Johannis de Cobham



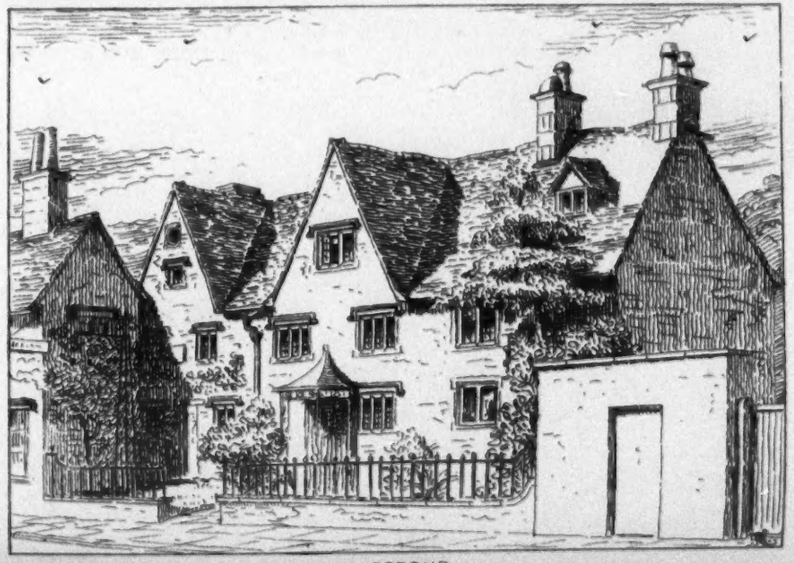
BRASS OF ROGER THORNTON: ALL SAINTS CHURCH, NEWCASTLE-ON-TYNE. (DATE 1429.)

HAZLETON.

KINGS ARMS, STROUD.



FRAMPTON MANSELL MANOR.

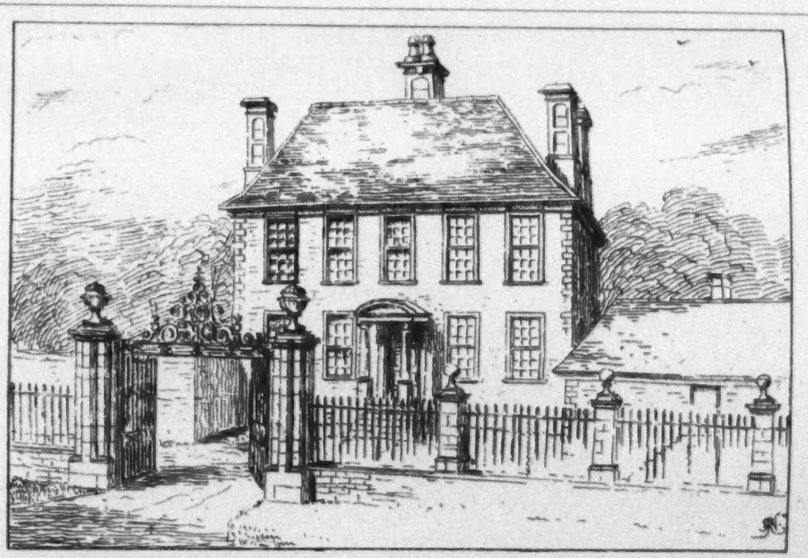


IN STROUD.

SKETCHES ABOUT THE GOLDEN VALLEY, GLOUCESTERSHIRE.—BY MR. RALPH NEVILL, F.S.A.

THE BUILDER, NOVEMBER 16, 1889.

CHAMBERS FARM



LOWER LYPIATT HOUSE

BOURN'S GREEN

MIDDLE LYPIATT

PHOTO-LITHO. SPRAGUE & Co. 62, MARTINS LANE, CANNON ST. LONDON, E.C.

SKETCHES ABOUT THE GOLDEN VALLEY, GLO'STERSHIRE.—By Mr. Ralph Nevill, F.S.A

within the discretion of the arbitrators or umpire; the production of books or documents having bearing on the matter at issue, and a power to compel the attendance of witnesses, on subpœna. The effect of this Act is to materially strengthen the hands of arbitrators or their umpire in every reasonable direction.

As most of those whom I address are aware, the question of rating advertising stations has been a subject of some difficulty. An Act, called the Advertising Stations Act, which received the Royal assent this year, provides for the rating of unoccupied or occupied premises in respect of increased rental value derived from their application to this purpose. The *occupier* is the person liable to be rated, not the advertising contractor. The power is reserved to the local authorities to enable them to prohibit or sanction the use of temporary hoardings for advertising purposes, subject to a payment or some other equivalent consideration. . . .

Before concluding, I cannot forget that this opening address marks the not distant termination of my occupancy of this chair. To be, for the time being, the official head of one's profession is a distinction of which any man may well be proud, and doubly so when he is called upon to preside over an institution so full of vitality and promise, and so intimately identified as this is with some of the most important interests in the arena of human affairs.

I am not of those whose faith fails them as regards the future of our profession. So long as separate ownership in property exists (which, I take it, will be so long as civilisation endures), the desire to acquire and the necessity for parting with property will continue to operate. Whoever the holders may be, they cannot afford to dispense with the skilled advice of those experienced in business transactions. The form of business may change; branches of practice may, in accordance with the modern tendency, become more specialised, but the business, I venture to predict, will remain and multiply after the present lull is over—the lull which, indeed, generally precedes all new developments.

We have taken upon ourselves, as an Institution, the duty of guiding the rising generation of surveyors in the path of exact knowledge which its predecessors would gladly have trodden had the opportunity existed. But no educational effort can endow the surveyor of the future with his best possession,—a candid and upright mind, and a desire to deal fairly as between all parties.

We have had brilliant examples to guide us in the past, and I doubt not that among those I see before me, possessing the ineffable glory of youth, there are many that will hand down the honourable traditions bequeathed to them by the generation that is passing away.

On the motion of Mr. W. Matthews, of Birmingham, seconded by Mr. Meadows White, Q.C., a vote of thanks was accorded to the President for his address.

THE LONDON COUNTY COUNCIL.

Election of Presiding Officers.—At the statutory meeting of this body, held on Thursday, the 7th inst., Lord Rosebery and Sir John Lubbock were unanimously re-elected Chairman and Vice-Chairman, respectively. With regard to the post of Deputy-Chairman, rendered vacant by the death of Mr. Firth, M.P., it was decided to reduce the salary from 2,000*l.* to 1,500*l.* per annum. Three nominations for this office were made, Mr. Fardell (who was a member of the late Metropolitan Board of Works), Mr. Alderman Gibb (Vestry Clerk of St. Pancras), and Mr. Councillor Haggis. When the names were first put, the numbers were:—Fardell, 51; Gibb, 19; Haggis, 59. Mr. Gibb's name having been dropped, the second voting resulted as follows—Fardell, 51; Haggis, 61. Mr. Haggis was therefore declared to be elected, and he briefly returned thanks for the appointment.

Death of the Chief Engineer.—At the ordinary weekly meeting, held on Tuesday last, the Chairman (Lord Rosebery) said he had to make the formal announcement of the death of the valuable official whom they appointed so short a time ago as their Chief Engineer. He had only been with them two months, and it was not possible for them to have a long experience of Mr. Gordon's qualities, but he was quite sure that there was no member of the Council who came in contact with him who did not experience the most ready courtesy from him, and who did not feel perfect confidence in his ability from the very first moment of coming in contact with him. He was afraid that not merely did Mr. Gordon's death fill them with regret at the loss they had sustained, but they could hardly have sustained a loss so severe at the present moment. They knew the enormous pressure there was on them to remedy the inadequacy of their main-drainage system. As their Chairman, he thought it his duty to call together the committee, composed of members of the Main-Drainage and Bridges Committees, who were appointed early in the year to consider the question of the appointment of a new Engineer. He thought the matter was so pressing, that though they were no longer a committee their advice—as being conversant with the question—would be most useful under the circumstances, and they came to the conclusion—which he confessed he also took—that there should be no delay in filling up the office. He did not think that it was necessary to renew the advertisement, and what he would propose was that the Council should reappoint these gentlemen as a committee to consider this question of the vacant office of Engineer. They were well versed in the claims of the different candidates they saw so lately: they would have power to summon any they might wish to see again, and they would even have power to see fresh candidates. They would be able in the light of common sense, free from the obstructions of red tape, to bring up a report as speedily as possible to the Council.

Mr. Rhodes, Chairman of the Main Drainage Committee, in expressing his regret at Mr. Gordon's death, said that in his opinion the stipend offered (1,500*l.* per annum) was not sufficient, and that they ought to take this opportunity of increasing it. This proposition, however, met with no favour, and

Sir John Lubbock moved that the suggestion of the Chairman should be adopted, and this was accordingly done.

The Chairman added that he was afraid that their late official had died under unfortunate circumstances, in some respects. He left his appointment at Leicester to come to them, and if he had died in that appointment he would, no doubt, have been entitled to consideration at the hands of the Council. It was a very difficult case to deal with. Of course, Mr. Gordon took the appointment as Engineer of the London County Council knowing exactly what the conditions were, and he had not been with them very long; but at the same time it was very melancholy to know that a gentleman whom they honoured so greatly should have died in circumstances which caused considerable concern to his family. He did not intend to make any proposal, but he would ask the Council to refer the matter to some committee so that they might bring up a report on the subject.

The matter was then referred to the Standing Committee, and on the motion of Mr. Marks, seconded by Mr. Harben, a vote of condolence was accorded to the family of the late Mr. Gordon.

Gift of a New Park to London.—The Chairman read a letter from Sir Sydney Waterlow, Bart., offering for the Council's acceptance, as a public park for London, some twenty-nine acres of land on the southern slope of Highgate-hill. The letter stated that "the grounds are undulating, well timbered with oaks, old cedars of Lebanon, and many other well-grown trees and shrubs. There are also 1½ acres of ornamental water supplied from natural springs. The land is freehold, with the exception of 2¾ acres held on a long lease, of which 35½ years are unexpired, and it is bounded almost entirely by public roads and a public footpath." For the purpose of acquiring the freehold interest in the 2¾ acres mentioned, or to defray the cost of laying out the estate as a public park, Sir Sydney further offered to pay the sum of 6,000*l.* The letter was received with great cheering; and on the motion of the Vice-Chairman, seconded by Mr. Gibb, and supported by the Deputy-Chairman (who said he hoped that the example set by Sir Sydney Waterlow would prove contagious), thanks were accorded to the munificent donor.

The New Asylum Buildings.—The Asylums Committee report as follows:—"Your Committee have to report that, in pursuance of the resolution of the Council of the 22nd ultimo,* they have again considered the tenders received for the execution of the works for the extension of the County of London Lunatic Asylum at Cane-hill, near Coulsdon, a list of which was submitted to the Council on the 15th ultimo. After making careful enquiry as to the capacity of several of the firms who sent in tenders to execute works of the character and magnitude of the proposed extension, your Committee have come to the conclusion that it is desirable that the contract should be entrusted to Messrs. Peto Brothers, of Pimlico, and they recommend—

'That the tender of Messrs. Peto Brothers for the execution of the works for the extension of the County Asylum for pauper lunatics at Cane-hill, Coulsdon, for the sum of 82,447*l.*, be accepted.'

'Your Committee have also to report that they have taken the steps necessary for giving effect to the resolution of the Council of the 22nd ultimo,* accepting the tender of Mr. E. Gabbutt, for the erection of the superstructure of a new County Lunatic Asylum at Claybury, near Woodford, Essex. It has been represented to your Committee by Mr. Gabbutt that, in consequence of the delay that has taken place since the tenders were sent in, the difficulty of completing the works under the contract by December 31, 1891, is much increased, and the Architect to the Asylum has informed your Committee that he is of opinion that the time for completion should be extended to March 25 following. With this opinion your Committee concur, and they ask the Council to extend the time accordingly. Your Committee submit the contract for the execution of the work, and recommend,—

'That the contract with Mr. E. Gabbutt, for the erection of the superstructure of the asylum at Claybury, be approved, that the time for the completion of the works under such contract be extended to March 25, 1892, and that the following documents be sealed.' "

The second of these recommendations was agreed to without discussion, but the first recommendation led to a good deal of debate, arising out of the fact that since the report and recommendation were drafted, Messrs. Peto Bros. had informed the Committee that mainly owing to the rise in the price of iron since the tender was sent in, the tender could not stand except by the addition to it of a sum of 1,400*l.* Under these circumstances the Committee withdrew the first recommendation; but eventually, on the motion of Alderman the Hon. R. C. Grosvenor, it was decided, by fifty votes to forty-five, to refer the report back to the Committee, with instructions to recommend the acceptance of Messrs. Peto's tender as amended by them.

After the transaction of some other business, the Council adjourned.

* See *Builder* for Oct. 26, Nov. 2, and Nov. 9.

THE SCHOOL BOARD FOR LONDON AND ITS BUILDING CONTRACTS.

At its meeting on October 31, the Rev. J. R. Diggle, Chairman, presiding, the Board resumed the debate† on the following motion and amendment thereon:—

Moved by Mr. Barnes, seconded by Mr. Lynn,—

"That the resolution of the Board of February 21, 1889, shall be interpreted in the following sense:—Where a division contains more than six schools, the Works Committee shall give contracts for general repairs and painting to separate contractors for groups of schools not exceeding six in each group."

Moved by Professor Gladstone, seconded by Mr. Whiteley,—

"That the proposed resolution be referred to the Works Committee for consideration and report."

The Chairman said he had received a letter from the honorary secretary of the builders' deputation, stating that they had intended to have asked to be again introduced to the Board for the purpose of answering further questions that they believed some members of the Board wished to put to them; they had, however, resolved not to do this, but to ask the Chairman to tell the Board that they agreed to the grouping of the schools, as suggested in Mr. Barnes's motion, provided it was made clear that the work was to be done under the Board's schedule of prices.

The Hon. Lyulph Stanley, in resuming the debate, said he understood that Mr. Bourke, the originator of this debate, was willing to accept Dr. Gladstone's amendment. If that was so, the Board need not now further discuss the question.

Mr. Bourke said Mr. Stanley had understood aright.

* See *Builder* for Oct. 26 and Nov. 9.
† See *Builder* for Nov. 2, p. 315.

Mr. Stanley said Mr. Barnes had just told him that he was not prepared to adopt this course, and the discussion must therefore proceed. He (Mr. Stanley) should vote for the amendment, because there were questions of detail that must be looked at all round. It would be unwise to ask the Board at this stage to vote absolutely on the proposition before them. The motion, if carried, meant the breaking up of London into something like seventy groups, and it would compel the Board to put the work into the hands of at least seventy firms. What he proposed was that the schools should be divided into groups (of the number proposed, if the Board thought that best); there should be a schedule of prices (the one they now had seemed to be satisfactory); then they should let any respectable builder, small or large, tender for any group. If the small man could do the work properly, at a lower sum than the large, he would get it. Let there be fair competition all round. There should be no more monopoly for the small man than, as the deputation seemed to imply, there was for the large.

Mr. Barnes said the deputation were quite willing that every respectable builder in London should have the same opportunity. What they complained of was that the small men had never had an opportunity of doing any of the Board's work. He made bold to say if the discussion had not been adjourned last week, but the motion put to the vote, it would have been carried. When the members voted for the motion providing that a selected list of builders should have the work, they did not think that the whole work was to be given to seven firms only.

Mrs. Besant said if the motion was passed it would make it almost impossible to carry out the work. It would throw the work in each district into the hands of the local men, and if this was done in the case of her own division (Tower Hamlets) it would be impossible to carry out the resolution of the Board with regard to the rate of wages, for there was not one firm in that division who paid the Union rate of wages. She intended, in the workman's interest, to support Mr. Helby in his action. Last summer the work had to be placed in the hands of some of these small men, to the injury of the work and the detriment of the working men. When they were dealing with big public work, what was there in the argument of giving the local men the local work? Would they think of giving their printing to some small "jobbing-house"? The Chairman of the Works Committee had been placed in a very awkward position by the uncertain voting of the members of the Board, he having entered into certain arrangements with contractors, in accordance with the resolution of the Board passed last August, and the Board were not now prepared to sanction Mr. Helby's action. To agree to the amendment would be doing justice to the Chairman and the members of the Committee.

Mr. Lucraft hoped the matter would go back to the Committee. He had not the least doubt that, after the discussion that had taken place on the question, all the members of the Committee would take care to be present, and would go into the matter in a better way than he considered it had been gone into. With regard to the fair rate of wages question, it was part of the contract that such should be paid the workmen, and if this could not be carried out in one division, the work must be given to contractors from a neighbouring division. There was nothing in this part of Mrs. Besant's argument.

Mr. Collins was quite prepared to vote for the matter being referred to the Works Committee, but he wanted first a distinct statement from Mr. Helby to the effect that he would endeavour to come to some arrangement that would meet the views of what he ventured to call the majority of the Board on this question. If this statement could not be made, there was no reason in referring the matter to the Committee. As to Mrs. Besant's statement with regard to the position Mr. Helby was placed in, when he voted for the system of a limited list of contractors, he did not suppose that it meant putting the work into the hands of seven or twenty-seven men, but it was for the Board to accept or reject the proposals in the Committee's report before the Board at the present time. [Printed in the *Builder* of October 19, pp. 277-78.] It was not a question of small men doing the great work of the Board. Those who thought with him wanted the local men to do the small repairs. For a big firm to send a man a long distance to do this small work was like cracking a nut with a steam-hammer. There ought to have been advertisements issued, giving every builder an opportunity of contracting for such work in his own locality. But the Committee had only invited twenty-two men to tender, and had selected seven out of the twenty-two men to do the work. He thought six schools too small a number for a group, and was rather in favour of Parliamentary divisions being adopted for the purpose, but he hoped the Works Committee would bring up a report favourable to the system of open competition.

The Rev. S. D. Headlam said he would support Mr. Barnes's amendment for the same reason that Mrs. Besant was against it—because of the smallness of the number of unionist houses in some parts of London.

Mr. Hart was in favour of the matter going down to the Committee as an open question, but not upon the views expressed by Mrs. Besant.

Mr. Helby said that if the question came back to the Committee, as he hoped it would, it would have his full consideration, and no doubt the full consideration of every member of the Committee. He complained of the treatment he had received at the hands of the Board. The Committee had carried out what the Board had authorised them to do, and they could not advertise in the way Mr. Collins spoke of. It was absolutely necessary that certain work should be done, and it was given out in the vacation, and the men had been doing the work most satisfactorily. The Rev. Oliver Mitchell complained last week of the carrying out of the work in Walworth. He (Mr. Helby) had made inquiries, and he found that the work was being done under the old system. As to fair wages, he could say that not a single man in the East-end of London had carried out the condition of paying the Union rate of wages laid down in the contract which they signed. The men employed by the secretary of the deputation now memorialising them had struck for higher wages. The matter, if referred to the Works Committee, would have full and fair consideration.

Mr. Gover said he must protest against the doctrines laid down by Mrs. Besant and Mr. Helby to the effect that the Board were bound to support the Committee in their action in this matter. It was now clear that the matter had been pretty much left to Mr. Helby, who was afterwards backed by his Committee. He (Mr. Gover) contended that the resolution of last August had not been carried out as the Board intended it to be. He declined to believe Mrs. Besant's unsupported statement that not a single man paid the Union rate of wages in the Tower Hamlets division. The Board ought to know, but it did not, how it was these selected firms were asked to compete. He hoped the matter would not be referred to the Works Committee upon the interpretation put upon it by Mrs. Besant.

Mr. Barnes, at this point, said he would accept the amendment.

The question was accordingly referred to the Works Committee.

At the meeting of the Board on the 7th inst., Mr. John Lobb put the following questions to the Chairman of the Works Committee (Mr. Helby):—

"1. Whether it is not a fact that up to Dec. 17, 1885, before the passing of the resolution publicly inviting tenders by advertisement, the contracts for schools and enlargement of schools were in the hands of a selected list.

2. Whether he considers that the selected list is the same as 'publicly inviting tenders by advertisements.'

3. Whether it is not a fact that, since the passing of the resolution publicly inviting tenders by advertisement on Dec. 17, 1885, up to Feb. 21, 1889, on which the said resolution was rescinded by the Board, not more than two builders have been added to the list."

Mr. Helby, in reply to No. 1, said that prior to the passing of the resolution of Dec. 17, 1885, contracts were entered into for the erection and enlargement of schools with builders selected from a list. To No. 2 he replied that there was no selected list. The list contained the names of builders who were placed thereon upon their own application or upon the recommendation of members of the Board. From the list so formed a selection was made, by officials of the Architect's Department, of builders who were asked to tender for the school buildings about to be erected. In reply to No. 3, Mr. Helby said that subsequent to the passing of the resolution of Dec. 17, 1885, the following steps were taken to carry it out. Tenders were asked by advertisement in five papers for the erection or enlargement of certain schools, and every person who desired, and was willing to pay the usual deposit, was provided with the necessary papers to enable him to tender. Unfortunately these steps resulted in contracts being obtained by only two additional builders beyond those who were previously successful, but he had every reason to believe that from the steps which the Works Committee were at present taking, in seeing that the specifications were strictly adhered to in every case in the erection of buildings, there would be a considerable accession of respectable and trustworthy builders who would tender for such work. In fact, builders of the highest respectability, for the first time for over fifteen years recently tendered for the erection of schools.*

BUILDERS' BENEVOLENT INSTITUTION: ANNUAL DINNER.

THE forty-second anniversary dinner in aid of the funds of this Institution was held on Thursday evening, the 7th inst., at Carpenters' Hall, London-wall. Mr. James W. Hobbs, J.P. (Mayor of Croydon), President of the Institution, occupied the chair, and was supported by Mr. Banister Fletcher, F.R.I.B.A. (Master of the Carpenters' Company); Sir George Chubb; Mr. George Plucknett, J.P. (Treasurer of the Institution); Mr. Steere; Mr. H. H. Bartlett; Captain Dibley; Mr. Thos. F. Rider; Mr. J. Howard Colls; Mr. W. Robertson; Mr. T. G. Smith; Mr. Burt; Mr. R. L. Curtis; Mr. Thos. Stirling, and other friends of the Institution, the whole company numbering about 170.

The Chairman gave the toast of "Her Majesty the Queen, the Prince of Wales, and the rest of the Royal Family."

Mr. H. H. Bartlett gave "The Army, Navy, and Reserve Forces," Major Brutton responding for the "Army and Navy," and Colonel Banister Fletcher for "The Reserve Forces."

The Chairman, in proposing the toast of the evening, "Success to the Builders' Benevolent Institution," said that the first thing to be thought of in regard to a charity of this sort was to consider what it had done in the past to commend it to support in the future. Their worthy Secretary, Major Brutton, had handed him some statistics, which showed that since the foundation of the Institution 142 men and 102 women had been elected as pensioners, making a grand total of 344, whom they might claim to have rescued from serious anxiety and poverty (cheers). At present there were twenty-four men and thirty-six women on the fund. Some of those who had received benefit from the Institution had at one time been in great affluence, showing how necessary it was for those who were in prosperity to do all they could in the way of alleviating the sufferings of those who had once stood in the same position. He supposed there was no trade which had more vicissitudes than the building trade. Trouble might arise from the delivery of faulty timber; from bricks not being up to sample; or from Vent in the stone after all the work had been put upon it. Then, when the work was executed in what the builder considered an honest manner, the surveyor might be out of town, the certificate could not be obtained, and, indeed, when it was forthcoming the lawyer possibly had not prepared a receipt (laughter). Those were burdens they could smile at then, but they were very different when their full meaning was realised. A builder might have many thousands of pounds honestly coming to him, but a £50 bill returned might entail bankruptcy and ruin. That being the case, it was astonishing that so many builders failed to support this most deserving charity. In this country there were a million and a half people engaged in the building trade, and in London alone, according to the last census, no fewer than 224,000 people made their living by it. Then again, in London there were 1,103 architects, 1,626 builders, and 434 surveyors, and looking at the income of the Institution, he could not consider it as properly representative of the great industry in whose interest the fund had been established. The Chairman concluded an eloquent appeal by coupling the toast with the name of Mr. George Plucknett, J.P., the Treasurer.

The toast having been duly honoured,

Mr. Plucknett replied on behalf of the Institution, saying that if the builders of the metropolis would only subscribe in their prosperity, all anxiety on the part of the

* Abridged from reports in the *School Board Chronicle* for Nov. 2 and Nov. 9.

committee would pass away, and many more pensioners could be elected (applause).

Mr. R. L. Curtis (Mayor of West Ham) proposed "The Worshipful Company of Carpenters." It was an immense advantage, he said, to have the annual dinner of the Institution in that noble hall instead of in some City tavern, the Company having the utmost sympathy in every branch of the building trade.

Col. Banister Fletcher (Master of the Company) replied, and expressed the pleasure that it had given to the Court to be able to assist the Institution. The Company was also doing all in its power, by the establishment of technical schools and examinations to advance the craft, and he hoped the builders themselves would give the work their help and countenance.

Mr. Alexander Ritchie next gave "The Health of the Chairman and President," adding that Mr. Hobbs was a man of many parts and great qualifications, and that it would have been difficult to have selected a man better able to fill the presidential chair.

The toast was drunk with acclamation, and the Chairman suitably replied.

Sir George Chubb proposed "The Architects and Surveyors."

Mr. H. Chatfeild Clarke responded, and expressed the interest which the architect felt in the builder; in fact, nothing could be more trying to the architect than to feel that the builder and contractor had come badly out of a job. The great buildings of the metropolis showed that the architects were doing their best for London of the present day. He also bore testimony to the work of the surveyors, and the esteem in which they were held.

Mr. W. H. Gibson gave "The Vice-Presidents, Committee, and Stewards," which was responded to by Messrs. W. Shepherd and C. Bassell. The concluding toast was that of "The Ladies."

In the course of the evening subscriptions to the amount of 912*l.* were first announced, of which sum 674*l.* appeared in the President's list. A further appeal from the chair realised another 50*l.*, when the Chairman intimated, amidst applause that he would make up the amount to 1,000*l.*

ARCHITECTURAL SOCIETIES.

Manchester Architectural Association.—The first ordinary meeting of this Association was held on the 5th inst., when the President (Mr. J. H. Woodhouse) delivered the opening address of the session. Referring to competitions, he said it was a mistake to compete unless there was a professional assessor or assessors, and he only wished they were so unanimous a body that they could compel all promoters of competitions to agree on this point. He advocated the taking-out of quantities by the architect, but insisted on the same being done with every care, and made as explanatory as possible, leaving no doubt in the mind of the builder as to his (the architect's) exact meaning and intention. He also referred to the proposed affiliation with the Royal Institute of British Architects, and to the communications received from the Manchester Society of Architects advocating the formation of one society instead of two as at present. A hearty vote of thanks to Mr. Woodhouse for his address was moved by Mr. A. H. Davies-Colley, seconded by Mr. Chadwick, supported by Messrs. Hodgson, Mee, and Potts, and carried unanimously. Thirteen new members were nominated, and a number of donations to the library were announced.

Sheffield Society of Architects and Surveyors.—A meeting of this Society was held last Tuesday night at the School of Art, Mr. C. J. Innocent, Vice-President, in the chair. Mr. J. Lancashire was elected a student of the Society, and Mr. W. Teather was also nominated by the Chairman. A letter was read from the President (Mr. F. Fowler), apologising for his non-attendance, owing to a long-standing engagement. Mr. W. H. Lancashire read a paper on "Engineering Surveying for Railways and Waterworks." He observed that the question of cost would not enter into his paper so much as his own experience of from twenty to twenty-five years of the work required from the surveyor and engineer in Parliamentary practice to comply with Standing Orders. In railway practice, nowadays, the surveying work was done by the staff of the company's own engineer, Ordnance Survey and town or district large scale maps being utilised in the preliminary work, and the Ordnance levels in laying out contours. Mr. Lancashire went on to describe the details of the finished surveys and levelling, and insisted upon the importance of checking levels taken. One in a hundred was considered a dangerous gradient twenty-five years ago, whilst with modern types of engines and rolling stock it was thought little of. Passing on to describe waterworks construction, he pointed out that the first considerations which presented themselves were population, trade supply, source, and a careful estimation of the rainfall and gathering-ground of a district. He concluded by a technical description of the various processes gone through in the construction of a great reservoir.

OBITUARY.

Mr. Joseph Gordon, M.Inst. C.E.—We announce with great regret the sudden death of Mr. Joseph Gordon, M. Inst. C.E., who was elected in July last (see *Builder* for July 13, p. 31) to the important position of Chief-Engineer to the London County Council, in succession to Sir Joseph Bazalgette, resigned. He entered upon the duties of that office on September 1. Mr. Gordon, who was fifty-two years of age, died on Saturday morning, the 9th inst., in an omnibus, while on his way from his residence at Hampstead to his office in Spring-gardens. Mr. Gordon, who was born at Haltwhistle, Northumberland, in 1837, began his professional career as an articled pupil to the late Mr. James Hogg, City Surveyor of Carlisle,—an office which he himself subsequently held from 1860 to 1866. He prepared many plans for the draining of large towns in the North of England and Scotland. In 1866 he was appointed to design and carry out a very important sewerage scheme at Frankfort-on-Main. He also prepared plans for the sewering of Stuttgart, Heilbronn, Munich, Nüremberg, Hamburg, Aix-la-Chapelle, and other Continental towns. In 1880 he became Borough Surveyor at Leicester, where his extensive operations greatly reduced the death-rate. He carried out flood works costing over 380,000*l.*, and he also designed the sewerage works now in progress, which will cost over 300,000*l.* He was elected an Associate of the Institution of Civil Engineers in 1862, and a Member of the Institution in 1874. He was President of the Association of Municipal and Sanitary Engineers and Surveyors for the year 1887-88, and his able presidential address will be found reported in the *Builder* for July 23, 1887. In our pages for October 22 of the same year will be found a detailed description (with illustrations) of the flood prevention works carried out by him at Leicester.—Dr. G. Danford Thomas held an inquest on the body of the deceased on Monday, when medical evidence was given to the effect that death was due to syncope whilst the deceased was suffering from a weak heart.——The funeral took place on Wednesday, in the Leicester Cemetery, leaving St. Pancras Station by the 10·30 a.m. express, the following members of the Association of Municipal Engineers attending, viz., Mr. Boulnois (President), Mr. Angell and Mr. Jones (Past-Presidents), Mr. Robson, Mr. McKie, Mr. Meade, Mr. Lowe, and Mr. Thomas Cole (Secretary). The London County Council was represented at the funeral, as was also the Corporation of Leicester.

Mr. William Millican, J.P., F.R.I.B.A., of Leicester, died on the 3rd inst., after a prolonged illness, in his fifty-ninth year. Mr. (or as he was better known locally) Colonel Millican was, according to the *Leicester Advertiser*, articled to Mr. Wm. Flint, architect, Friar-lane, Leicester. He eventually succeeded in building up an extensive practice, and erected many important buildings in the town. He took a very active part in the Volunteer movement, as well as in municipal affairs, and was a magistrate of the borough. He was elected a Fellow of the Royal Institute of British Architects in 1878. His remains were interred in the Leicester Cemetery on the 7th inst.

Mr. John George Gamble, C.E., died a few days ago, in Dublin, of typhoid fever, at the age of forty-seven. According to the *Times*, he was a pupil of Sir John Hawkshaw, and was engaged under him on several important works. In 1875 Mr. Gamble was appointed hydraulic engineer to the Cape Colony, a position he held for more than ten years, encouraging storage and irrigation, and constructing large and valuable works. He returned to England in 1886, and shortly afterwards was appointed chief hydraulic engineer to the Government in Ireland, in which capacity he has been engaged for the last two years in preparing plans for the improvement of the three important rivers, the Shannon, the Barrow, and the Bann, to carry out the recommendations of the Royal Commission on Irish Public Works. The loss of his services will be greatly felt in respect of these important undertakings.

The Student's Column.

WATER-SUPPLY.—XX.

LONDON WATER-SUPPLY (*continued*).

Nature of the Geological Strata.

IN the preceding article we gave the thicknesses of the several geological strata, &c., met with in well-boring under the metropolis, and now we propose to describe their nature, in so far as it affects the methods of constructing and making the wells. The following is a summary in descending order (geologically) of the different strata met with in and around London:—

1. Drift Gravel, &c.
2. Bagshot series.
3. London Clay.
4. Oldhaven and Blackheath series.
5. Woolwich and Reading series.
6. Thanet series.
7. Chalk.
8. Upper Greensand.
9. Gault.
10. Lower Greensand.
11. Jurassic.
12. Trias. (?).
13. Devonian.
14. Wenlock beds (Silurian).

Above all these we have, especially in the City and in those parts of the London area early settled upon, a certain thickness of made ground,—the *débris* and accumulations of successive buildings, rubbish-heaps, &c.

1. *Drift.*—A series of absorbent gravels and sands, which contains a considerable quantity of water, held up by the impervious London clay (where the Bagshot beds are absent) beneath. For centuries this was the chief source of supply to the inhabitants, and large numbers of wells were sunk to the top of the clay. In addition to the fact that it was not suitable for general supply, it became fearfully polluted by sewage, &c., and was eventually abandoned.

2. *Bagshot Series.*—A capping of the Lower Bagshot sands (or, as they are now sometimes termed, "London sands") is found on the heights of Highgate and Hampstead, and assist in the formation of the ponds at those places. At Bagshot Heath, in Surrey, there is a considerable thickness of these beds, which are important as water-bearing strata. It has even been suggested that the public London water-supply should be largely derived from this source. From the circumstance, however, that these beds are somewhat impure, containing seams of lignite in parts, &c., the water obtained is not always of the best quality. Many wells have been sunk into the Bagshot series in the district where they are typically represented.

3. *London Clay.*—This thick argillaceous deposit is very persistent, and plays a conspicuous part in regulating the underground water-supply of the London district. It is a stiff blue clay (brown at the surface when weathered), remarkably homogeneous in character, though here and there with thin seams of sand from which water rarely issues in well-borings. It does not present any serious difficulty to bore through, except that at certain levels, hard masses of concretionary matter, known as *septaria*, are met with. The *septaria* are rarely more than 2 ft. in thickness, and oftener only 1 ft. The base of the London clay is sandy, terminating usually in a pebble bed. The thickness of pebble beds can never be predicted, nor, indeed, in this particular case is the bed persistent throughout the whole area; but, speaking generally, it is more persistent to the south than to the north and central areas (of the London basin), where, indeed, well-sinkings often show it to be entirely absent. In estimating the cost of sinking, it is well to assume that it is about 3 ft. in thickness where its presence may be suspected. Water is often met with in small quantities, as inexperienced borers soon find out.

4. *Oldhaven and Blackheath Series.*—A mass of pebbles, usually with sand, of variable thickness, but which in some localities near London—*e.g.*, Blackheath, Bostal Heath and Plum-

stead, are more than 20 ft. in thickness. In well sinking, from 12 to 15 ft. may be estimated almost anywhere near the southern outcrop, as the thickness of this sandy pebble bed from Croydon eastwards—bearing in mind what we have just remarked concerning the thickness of pebble beds in general. The formation appears to be wedge-shaped, the thick end of the wedge being at the outcrop, the thin extending under London. In a well at the Caterham Waterworks, the pebble-bed, presumably on this horison, was found to be 90 ft. thick, and even then, although the chalk was met with, the gravel was not pierced through before 140 ft. from the surface was reached. This is almost unique, but we mention the fact to show a possible contingency in well-boring in outlying areas on patches of beds separated from the main mass and lying on the chalk. The great thickness in this case is probably due to what is known to geologists as a "swallow hole," as pointed out by Mr. Whitaker. A "swallow hole" is, briefly, a more or less cylindrical hole bored to some depth in limestone rocks, such as chalk, by the agency of running water. In the Caterham well "swallow hole" alluded to, the gravel has apparently subsequently fallen in. It is noteworthy that the pebbles of the Oldhaven and Blackheath series are nearly all (almost without exception) very round and made of flint. Where there is not much sand to bind them together they form very treacherous ground, possessing the property of "running" in a marked degree.

5. *Woolwich and Reading Series.*—These beds are extremely variable in character, and it is not possible to predict with any degree of accuracy the precise nature of the deposits which will be met with in well-boring, unless the underground geology of the proposed site is thoroughly well known. Speaking generally, they present thin beds of mottled clays, sands, pebbles, shell-beds, and iron-pans alternating with each other. In the western and central parts of the London basin, the mottled-clay predominates. Perhaps no part of the beds above the chalk presents so many difficulties to bore through as the Woolwich and Reading series. The beds frequently contain enormous quantities of water (not fit, in the central area, for human consumption), and this is a great hindrance to the progress of well-sinking; whilst the variable nature of the strata often makes it uncertain as to how long the nuisance will continue, within certain limits.

6. *Thanet Series.*—These beds, fortunately, are tolerably persistent in character. The mass of them is a medium-grained sand, the thickness of which may be gathered from the tables in our last article. Like most other local deposits, it is more or less stratified, some of the strata being more argillaceous than others, but pebble beds are seldom met with, and even then the pebbles are much scattered. At its base it is more argillaceous, and, in certain parts of the London basin, a regular bed of clay is here met with, which occasionally holds up large quantities of water, making the Thanet sand a good water-bearing deposit. In years gone by, many wells derived their supply from this level, especially those for breweries, but for various reasons, on account of contamination, &c., they have been bored deeper, and into the chalk.

7. *Chalk.*—This well-known water-bearing formation, to which we have had frequent occasion to refer, is separated from the overlying Tertiary beds by a mass of large green-coated flints, which, presumably, have been dissolved out of the chalk by the action of percolating water. The flint bed is rarely more than 1 to 2 ft. in thickness, but is remarkable for its persistency throughout the whole London basin. Indeed, we may say that almost wherever a junction is seen between the Chalk and Tertiary strata throughout North-western Europe, this thin flint bed is met with. This, therefore, is an obstacle found in nearly all borings to the chalk. It may readily be recognised, not only from the peculiar green colouring of the flint, but from the circumstance that no pebbles are present; the pieces are typical flints or else tabular in form. The chalk under London may be divided into two parts: the upper, containing seams of flint with many cracks and joints; the lower, having no flints, being more compact and slightly argillaceous. The late Prof. Ansted remarked that the upper chalk may be regarded as most usually the conducting, and the lower chalk as the containing part of the formation, so far as water is concerned. Although borings in the London basin have, in the vast majority of cases, been productive of an excellent and copious supply of water for large establishments, instances are on record where disappointment has ensued. At the same time, it would be difficult to sink through the formation without finding abundant water in the central area. From the fact that the formation is so largely drawn upon, however, it is advisable to sink deeply into it. Any springs found in the uppermost 150 ft., will in time be liable to run dry. It is through the cracks and joints that the water so freely percolates chalk, and the supply is largely regulated by their size and disposition.

8. *Upper Greensand.*—This formation of medium-grained sand, about 50 ft. thick at its outcrop on the south, becomes much attenuated as it goes under the metropolis, being only 28 ft. in thickness in the Tottenham-court-road boring, and 14 ft. in the Kentish Town well-section. It thins out altogether as it goes north, between Shefford and Ware, not being recognisable between the outcrops of the chalk and gault near the former place. It is water-bearing, though not of much value in this respect.

9. *Gault.*—In our area, this formation is invariably found in deep well-borings. It is abnormally thick at Caterham,—340 ft.,—200 ft. at Richmond, and between 140 ft. and 160 ft. as it goes northwards. It is a stiff retentive clay, and does not present many difficulties in boring.

10. *Lower Greensand.*—The exact extent of this deposit under London is not yet definitely ascertained. It would appear that it is 400 to 500 feet thick at its outcrops round the gault, but dies out as it recedes from these points, being absent under London. It is a water-bearing stratum, formed of sand, and occasionally having iron pans and streaks running through it. Its gathering ground is comparatively small, and it so rapidly thins out that, hitherto, attempts have not been particularly successful in obtaining water from this bed in the vicinity of the metropolitan boundary. The most likely localities for water are at places not far from its outcrop, and we may mention that at Chatham, and the vicinity, wells seem to be successful, though the formation under that locality is very thin.

The other formations from 11 to 14, both inclusive, although influencing the distribution of water under London at very great depths, are not of sufficient practical importance in regard to water-supply for us to consider them in detail. As we have previously stated, it does not generally pay to bore for water beneath the chalk. The deeper-seated rocks, however, are very interesting from a purely geological standpoint; and when our knowledge concerning the occurrence of Nos. 12 and 13 is more extended, the question as to whether coal exists, or not, under the London basin will be definitely settled. From a commercial point of view, the solution of this question is not, we believe, of any great moment; for, if coal should eventually be found, we do not think it could be remuneratively worked.

SEWERAGE WORKS.

Royton Local Board Main Sewerage Works.—Mr. T. S. McCallum, C.E., of Manchester, has been appointed engineer (in succession to the late Mr. R. Vawser, M.Inst. C.E.), for carrying out the main sewerage works of the Local Board District of Royton, near Oldham.

Shaw, near Oldham.—Good progress is being made with the works designed by Mr. J. Mawson, the Surveyor to the Local Board, for the disposal of the sewage of Shaw. After mature deliberation and inspection of the systems in practical operation at other places, the Local Board decided to adopt the process of sewage treatment introduced by the International Water and Sewage Purification Company, of Westminster; and Shaw will be the first town in Lancashire where this process will be adopted.

Swinton and Pendlebury Main Sewerage and Purification Works.—Mr. T. S. McCallum, C.E., of Manchester, has been appointed engineer (in succession to the late Mr. R. Vawser, M.Inst. C.E.), to complete the Slackbrook Sewerage and Purification Works for the Local Board of Swinton and Pendlebury, near Manchester.

City Surveyorship, York.—Mr. Alfred Creer, A.M.Inst.C.E., Borough surveyor of Lancaster, has been appointed City Surveyor of York; there were eighty-six applications for the office.

Books.

Timber and some of its Diseases. By H. Marshall Ward, F.R.S., F.L.S. *Nature Series.* Macmillan, 1889.

Dry Rot in Timber. By W. H. Bidlake, A.R.I.B.A. London: Batsford, 1889.

THE title of Professor Ward's book is liable to be misunderstood. The book is chiefly devoted to a description of the diseases of living trees, and it is, therefore, a manual for the forester rather than the architect or the builder. A chapter is, however, devoted to the subject of "dry rot," a "domestic" disease of dead timber, and one of the most serious evils with which the builder has to contend. The volume, which consists of a series of articles reprinted and enlarged from *Nature*, reads like an elementary treatise on surgery. Almost all—probably all—the diseases of timber are due to fungous growths, some of which are large objects obvious to the most casual observer, such as the bracket-like fungus which projects from the stems of decaying trees, and the vari-coloured toadstools which grow among their roots, or to exceedingly minute fungi which need a powerful microscope to detect their presence, such as the moulds which infest the leaves as well as the woody structures, and which find their way through the breathing-pores on the under surface of the leaves, and into the woody tissues through wounds in the epidermis or rough outer bark. The ubiquitous natures of the spores of such organisms can be well understood, and the wonder is how any living trees or cut timber are able to resist their attacks. Professor Ward describes one of these pests as spending part of its life on the leaves of the common groundsel of our gardens, and the remainder on the pine-tree,—a diversity of tastes and adaptability to varying conditions of life which is by no means uncommon among these low forms of vegetation.

The "antiseptic treatment" of diseases both of living and dead timber is dealt with by Prof. Ward, and the nature of dry-rot and the precautions to be taken against it are also dealt with by Mr. Bidlake in his monograph. Mr. Bidlake treats the subject in more popular language, but he acknowledges his debt for his facts to Prof. Ward's original articles in *Nature*. Both books are well illustrated, but, nevertheless, we fear the general readers will find Prof. Ward's somewhat too technical in its language. A long article, occupying nearly a third of the volume, dealing with the various theories of scientific men on the ascent of water in trees is especially open to this objection, and it has little connexion with the principal subject of the work. It belongs to the more abstruce province of vegetable physiology, as does also the chapter on the classification of timbers.

Special chapters are devoted to "canker" in the larch, "pine-blister," leaf diseases, and the "damping off" of seedling trees. A chapter on the healing of wounds after the breaking off of branches by wind, &c., or their removal by the forester, is well illustrated, and very interesting reading. The subject of vegetable pathology is one of great importance, and Prof. Ward's manual is the only one, we believe, which brings up our knowledge to a level with Continental writers. It is fragmentary, but we trust it will be soon followed by a more complete treatise.

How to Select Wood-Working Machinery. By J. Stafford Ransome, Ass.-M.Inst. C.E. London: William Rider & Son.

THIS is an excellent little book, full of information for those to whom it is addressed, the purchasers and users of wood-working machinery. Most of our readers will recognise in the author a gentleman connected with a leading firm of engineers who have made a specialty of wood-working machinery, and who, it may be added, have brought this branch of engineering to a very high degree of perfection. The fact augurs well for the book in one sense, and ill in another. No man can have so complete a knowledge of any kind of machine-tools as he who designs and makes them. On the other hand, the maker is likely to be biassed in favour of his own productions, and when he writes a book too often seizes the opportunity to puff his own wares. Into this fault Mr. Ransome has not fallen. Throughout the book there is no suspicion of "an axe to grind." This is a good thing to chronicle in these days of cunning advertisement.

However, Mr. Ransome's virtues as an author are by no means confined to those of omission. His plan is good, the subject matter being treated in sections which follow in natural gradation. He begins with an introductory chapter on the question generally, in which the salient points of good and bad machinery are treated. His advice on the subject of good—if somewhat dearer—as against bad—though cheaper—machinery, will be appreciated by every one who has ever had to use the latter. His remarks apply almost with greater force to the case of wood-working machinery than to any other class of machine-tools. We always remember, in this connexion, a favourite saying of an old master we once served under, "It is only the richest firms that can afford to use common machine tools"; the inference being, of course, that they are so much dearer in the long run.

A short chapter on "Some Common Mistakes" contains a few shrewd hints. We are glad to see that the author does not throw dirt on catalogue information, after the manner of many writers,—indeed, he advises the purchaser to get as many as he can,—and to this we would add: "neither despise the selling agent, or commercial traveller, if you have sufficient strength of character to withstand his blandishments; otherwise, seclude yourself rigorously." There is a deal of information to be got from these gentlemen, not only on the perfection of their own goods, but on the blemishes of their neighbours'. On the latter point they are refreshingly candid. There is a chapter on second-hand machinery,—which is often far dearer than it seems, because it is generally "not quite the thing,"—and then a good chapter on motive power. The author does not seem to think the time has yet arrived for the gas-engine to take the place of steam in ordinary situations. He puts down 20 effective h.p. at about £1 per day for gas. For the same power, 4s. 2d. per day would have to be spent in coal, and 5s. per day stoker's wages; so that the economy of steam over gas would be 10s. 10d. per day. If waste wood and chips were used as fuel the saving would, of course, be far greater. There are, however, "some important patents which in the course of a few years will lapse," and then, the author thinks, will be a time for the reconsideration of the subject. After a chapter on the functions of wood-working machinery, the author gets to the details of his subject. He begins with the tree in the forest, cuts it down by a steam-saw, handles the logs after felling, on the ground and in the yard, and breaks down the heavy timber by circular, rack, or band-saw; the remarks on the latter subject being especially worth attention. We then get on to the finer machinery, a chapter being given to fret-saws. Cross-cutting saws are next dealt with, and an instructive chapter on saw-blades follows.

The consideration of planing and moulding machines opens up another important section of the work. Boring and mortising machines, tenoning machines, lathes, dovetailing machines, sand-papering machines, and other descriptions of wood-working machine tools are dealt with at greater or less length. After this comes a section dealing with matters of cognate interest,—such as shafting, bearings, and couplings; the automatic collection of wood refuse; pulleys, belting, and lubricators, and a few other details connected with shop practice.

On the whole, we have no hesitation in recommending this unpretending little book as well fulfilling the purpose which the author claims for it. Indeed, it is seldom one sees so much good matter so modestly presented. The numerous illustrations, although not high specimens of the wood engraver's art, are sufficiently well designed to serve the purpose of helping the text.

The Cost of City Improvements.—The widening of Ludgate-hill has covered a period of nearly twenty years, and is now almost completed. The houses set back are all on the southern side. The first lot, including the houses from 51 to 71, Ludgate-hill, cost the Commission of Sewers, 85,405*l*. A few years later another block was taken—19 to 35—at a cost of 43,825*l*. The houses 11 to 17 necessitated an outlay of 63,268*l*., and the last operation, including 37 to 47, and 5, St. Martin's-court, cost 131,828*l*. This makes a total expenditure up to the present time of 324,326*l*., but there will be a considerable recoupment in connexion with the last item.—*City Press.*

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

17,308, Sawing Stone. J. Pickover.

To facilitate the sawing of stone, a series of circular saws of different diameters are, according to this invention, used, so arranged that the saw of the smallest diameter works upon the stone first, and that of the largest diameter last, so that a kerf of gradually-increasing depth is formed as the stone moves past the saws. The larger saws are made in segments or plates secured by means of double dovetailed kerfs fitted in dovetailed notches in the tapered faces of the segments. Above the saws is mounted a sand-trough having tubes which lead in front of the saws, so mounted and set that the water will feed the same to the kerf at the proper point.

17,415, Blocks for Building. A. Katz.

These building blocks, which are designed for use in partitions, ceilings, &c., are made of a mixture of woody refuse, such as chaff, chopped straw, husks, woody fibre, &c., or other light or porous bodies, worked up with lime or cement, and poured into moulds so constructed as to form blocks having hollow passages or spaces, made in such a way as to decrease the weight without materially diminishing the strength in the direction of strain or pressure.

17,422, Ventilators, &c. J. Utley.

The ventilators are chiefly designed for use with ships' side-lights. A suitable chamber or compartment in the side of the vessel communicates on the outside of the vessel with the open air through the side-light or port, and upon the inside with one or more air tubes or passages, by means of which the air can be conveyed to the compartment or compartments in the interior of the vessel it is desired to ventilate. Suitable floats, or valves, are fitted so as to close the apertures in case the openings are submerged.

17,563, Fireproof Floors. W. Lindsay.

The floor which is the subject of this patent is made of bricks, the length of which is equal to half the distance between the walls or other supports which carry the floor. Every alternate course consists of two whole bricks, and the remaining courses of a whole brick in the middle and half a brick each side, so that the courses break bond. The faces of the bricks where they rest against each other are made in such a form that they interlock one with the other. The bricks are grouted or cemented together.

8,597, Enamel for Building Materials. J. Stiel.

According to this invention, an enamel produced by mixing gravel, phosphates, and carbonates with metallic oxides, is put on to bricks, window-sills, or building materials, and the smooth surface thus formed will resist all action of the weather.

9,148, Iridescent Blown or Rolled Window-glass. E. Grosse.

After the sheet of window-glass is smoothed out in the ordinary process of manufacture, in the stretching or annealing furnace, the glass is sprinkled with powders which give it an iridescent appearance, which is novel in window-glass.

15,653, Fasteners for Sliding Windows. W. J. T. Goatley and G. Burton.

These fasteners for retaining sliding sashes of carriage or other windows may be applied to the sash or to the frame, either entirely concealed from view or placed upon the sash or the frame. There is in this invention a combination of a spring bolt working with or against a waved or corrugated plate of metal, so that the bolt, assisted by the pressure of a spring, will hold the sash against the force of gravity, and yet allow of its being lifted or lowered at will.

17,495, Incombustible Roof. J. Dinsmore.

This invention consists of a simple and light arrangement of wrought-iron framing to carry tiles, slates, sheet metal, or glass, so as to form an incombustible roof, and entirely dispense with wood. A piece of inverted T-iron is bent to the required angle to form the ridge, and the two rafters are formed out of one piece this shape, the lower ends resting upon walls or columns. The flange forms the rebate, and the overlap is cemented with mastic or other suitable cement. The covering material is carried between the rafters.

17,970, Window-sashes. W. Lindsay.

According to this invention, the vertical iron sash-bars and the horizontal bars are made in one piece from end to end, and with slots cut for the narrower bars to pass through. A shallow notch is also left or cast to allow for the cross-bars passing through.

17,991, Improvements in water-closets. J. & A. Duckett.

The object of these improvements is twofold,—(1) to combine the flushing-chamber with the closet-pan, and (2) to construct and adapt the outlet of the pan to the socket of an ordinary drain, that the outlet of the latter may be turned in any direction to suit the main drain.

4,579, Kitchen Ranges. C. H. Perrot and others.

This invention relates to ranges with rising bottom-grates, the grates being provided with a rack which keeps them in position when raised up, and with a hinged lever for releasing the rack when it is desired to lower the grate.

11,281, Improvements in water-closets. J. Dean.

This invention relates to closets flushed by water controlled by the action of a hinged seat, in which an after-flush of disinfectant takes place. Elaborate mechanism is provided to allow of the effective flushing by fall of water and for the after-flow of the disinfectant, the action being controlled by the hinged seat.

NEW APPLICATIONS FOR PATENTS.

Oct. 21.—16,579, W. Bradford, Flooring Material.—16,587, E. Howell and G. Thomas, Protector for the Roll-ends of Wall Paper, &c.

Oct. 22.—16,621, H. Jolly, Attachment for Augers.—16,651, L. Groth, Brazing Band-saws.—16,706, P. Bonner, White Lead.

Oct. 23.—16,715. J. Keighley, Ventilator.—16,720, W. Scott-Moncrieff, Syphon-flushing Cisterns.—16,726, T. Ashenhurst, Knobs or Handles for Doors, &c. and attaching same.—16,752, J. Jofeh, Checking Workmen's Time.

Oct. 24.—16,774, H. Maddern, jun., Carpenters' Ploughs and Fillisters.—16,781. C. Gabriel, Syphon Cisterns for Flushing Water Closets, &c.—16,784, W. Muirhead, Automatically Flushing Drains, &c.—16,804, J. Wilson, Nails.—16,819, J. Sherwin, Opening and Closing Gear for Greenhouses or other Ventilators.

Oct. 25.—16,831, W. Cowan, Flushing Cisterns, &c.—16,860, E. Urry and G. Farini, Mechanism for Closing Doors.—16,885, H. Lake, Bridges and similar structures.—16,888, T. Lixsmith, Plank Supporting Frames for Builders, Painters, &c.

Oct. 26.—16,911, S. and S. Hill, Draught, Rain, or Dust Excluders, for Doors, &c.—16,915, J. Margison, Combined Door-knocker and Bell.—16,941, H. Blake, Block Paving.

Oct. 28.—16,975, A. Bland, Gully-traps.—17,002, J. Stevens and C. Major, Spring Hinges for Doors.—17,032, H. Lake, Portable Scaffolds.

Oct. 29.—17,067, C. Rogers, Wood Screws.—17,094, T. James, Windows and Casings.—17,121, L. Kennedy, Brick and Tile Machines.

Oct. 30.—17,146, J. Mattison, Window Sash-frame.—17,186, J. Edelbaum, Chimney Cowls.—17,192, H. Board, Construction of Roofs and Sides of Buildings, especially for horticultural purposes.—17,199, D. Mersing, Veneer Saws.—17,211, W. Akerman, Kilns or Ovens for Burning Cement, Lime, Bricks, &c.

Oct. 31.—17,243, E. Hollanders, Door Locks.—17,280, L. Blumer and J. Tait, Lime Kilns.

Nov. 1.—17,299, R. Aitken, Method of Making Double-hung Sash-Windows open inwards like a door.—17,332, F. White and D. Banfield, Door Easer and Fastener.—17,335, F. Nickel, Support for Scaffolding.—17,337, S. Sharp, Draught Preventer for Doors.—17,357, D. Bryce, Wall Frames.

Nov. 2.—17,382, W. and J. Rhoades, Prevention of Down-Draughts in Chimneys.—17,422, F. Podany, son., Clearing Timber of Sap.—17,442, J. Hamblet and A. Plant, Flooring Tiles, &c.—17,443, W. Lindsay, Tiles, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

13,280, J. Arnold, Disinfecting and Deodorising Sewer Gases, &c., in Soil Pipes, Drains, &c.—13,410, E. Thomas, Ventilators and Chimney Cowls.—13,953, C. Crabtree, Drain Pipes.—14,423, G. Deacon, Glazing Roofs, &c.—14,766, W. Snelgrove and W. Avery, Door-checking Brackets and Fittings.—14,787, A. Mitchell, Joint for Drain Pipes, &c.—14,808, A. Black, Lead Water-pipes.—15,005, C. Rabitz, Wire-netting for use in the manufacture of Fire-proof Ceilings, Walls, &c.—15,538, E. Wren, Screw.—15,603, J. Austin, Sash-fasteners.—15,638, P. Nicolas, Stop for Doors and Windows.—15,697, T. Kershaw, Door Knobs or Furniture.—15,720, H. Haddan, Sawing Machinery.—15,790, H. Haddan, Guides for Circular Saws.—15,791, H. Haddan, Band Saws.—15,807, T. Llewellyn, Holdfast, or Cramp for Joiners, &c.—15,831, F. Meyenberg, Brick and Pottery Kilns.—15,854, W. Thompson, Grinding Machines for Frame Saws.—13,980, R. Macdonald, Cisterns for Flushing Water-closets.—14,042, D. Law and others, Automatic Flushing Cisterns.—14,145, P. Hoy and J. Jones, Drainage.—14,512, J. Donkin, Saws.—14,706, J. Morris, Ventilator.—14,963, H. Stanton, Fire-resisting Floors for Buildings.—15,174, T. Mercer, Automatic Sash Fastener.—15,366, J. and F. Howorth, Ventilating.—15,490, J. Brooks, Sash Fasteners.—15,509, C. Martin, Electric Bells.—15,524, F. Barry, Electric Bells.—15,778, G. Notton, Paint Kettle, or Can.—15,950, J. Thame and L. Jacobs, Portable Buildings.—16,078, J. Nash, Construction of Walls of Buildings, Partitions, Floors, &c., so as to render them sound proof.—16,100, E. Stowell and G. Thomas, Preparation and Hanging of Wall-papers, &c.—16,192, C. Broad and C. McCann, Metallic Sills for Windows and Door-frames and Casings.—16,201, W. Sayer, Air Propellers or Ventilating Fans.—16,312, D. Waddell, Closing Ladder.—16,516, J. Shenton, Brick and Drain Pipe Making Machines.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

16,448, T. Smith, Mitreing Machines.—18,294, E. Strange and J. Austen, Smoke Extractors, Exhaust Ventilators, &c.—18,866, T. Twyford, Lavatory Wash Basins and Fittings.—6,543, H. Algar, Locking or Fastening Sliding Sashes, &c.—12,648, G. Bailey, Bakers' Ovens.—15,795, P. Davies, Lead Tanks and Ventilating same.—16,285, J. Nicholls, Window Sash Holder and Bolt.—18,624, J. Connell and J. Gordon, Valve Apparatus for Water-closets, &c.—18,865, T. Twyford, Water-closets.—304, J. Sutcliffe, Window Sash-fastener.—11,922, G. Redfern, Composition for Covering Walls.—13,649, J. Weiss, Handles for Tools.—14,237, W. Thompson, Flushing Apparatus.—15,336, J. and F. Howorth, Ventilating Apparatus.

RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

NOV. 4.—By WAGSTAFF & WARMAN.

Kennington—9 to 17 (odd), Methley-st., u.t. 42 yrs., g.r. £25, r. £192 p.a. £1,080
Camden-rd.—18, Torriano-avenue, u.t. 55 yrs., g.r. £5 300
Islington—66, Morton-rd., u.t. 63 yrs., g.r. £7, r. £45 p.a. 425
42, Alma-st., u.t. 45 yrs., g.r. £5, r. £42 p.a. 405

By GEO. HEAD & CO.

Dorset-sq.—18, 20, and 22, Boston-pl., and 22, Balcombe-st., u.t. 20 yrs., g.r. £33. 12s. 1,250

NOV. 5.—By BRAY, YOUNG, & CO.

Caledonian-rd.—68, Gifford-st., u.t. 60 yrs., g.r. £6, r. £30 p.a. 250

By THURGOOD & MARTIN.

Holloway—F.g.r. of £6. 1s., with reversion in 75 yrs. 180
Westbourne-grove—27, Hereford-rd., u.t. 32 yrs., g.r. £5. 10s. 625
Kilburn—34, Beethoven-st., u.t. 97 yrs., g.r. £7, r. £37 200
Ventnor—Alexander-parade, f.g.r. of £47, with reversion in 992 yrs. 965

By P. MATTHEWS.

Old Kent-rd.—34, Glengall-rd., f., e.r. £36 p.a. 500
46 and 48, Downes-st., f., e.r. £40. 10s. p.a. 400
747, 747a, and 749, Old Kent-rd., u.t. 22 yrs., g.r. £16 660
751, 753, and 755, Old Kent-rd., u.t. 22 yrs., g.r. £47 675

By A. RICHARDS.

City of London—1, 2, and 3, Fenton's-bldgs., f. 1,400
Goswell-rd.—10, Gee-st., f., e.r. £30 p.a. 275

By WILKINSON, SON, & WELCH.

Brighton—48, Marine-parade, f.r. of £100, reversion in 16 yrs. 3,500
124, Western-rd., f., r. £80 p.a. 1,500

NOV. 6.—By W. T. MARSH.

Enfield—1 and 2, Riley-villas, f. 305
Islington—35 and 36, Clayton-st., l., r. £52 p.a. 287

By ROGERS, CHAPMAN, & CO.

West Kensington—26, Charleville-rd., u.t. 87 yrs., g.r. £14. 10s. 590

By A. WATSON.

Houndsditch—117, Gravel-la., and 17, Gun-sq., f., r. £51 p.a. 1,008

By T. B. WESTACOTT.

Kentish Town—81, Malden-rd., u.t. 60 yrs., g.r. £8 530

NOV. 7.—By W. W. JENKINSON.

Jamaica—Ballard's Valley, Barry Hill Pen, and part of Killancholly Sugar Estates, containing 1,892 acres 4,350

By NEWSON & HARDING.

Hoxton—10 and part of 8, Pitfield-st., and 1 and 2, Boot-st., u.t. 670 yrs., g.r. £2. 10s., r. £144 p.a. 1,000
Lower Clapton—16, Linscott-rd., u.t. 89 yrs., g.r. £7. 10s., r. £46. 10s. 270
Dalston—L.g.r. £8. 7s., u.t. 52 yrs. 160
Haggerston—36, Angrave-st., f., r. £32 p.a. 405
Forest-gate—270, Romford-rd., f., r. £36 p.a. 580

By FULLER & FULLER.

West Brompton—23, Edith-grove, u.t. 66 yrs., g.r. £7. 10s. 650
Edgware-rd.—50, Molyneux-st., f., e.r. £50 710

By J. A. JONES.

Warwick-sq.—35, Gloucester-st., u.t. 48 yrs., g.r. £12 700

NOV. 8.—By W. HOLCOMBE.

Oxford-st.—Nos. 402 and 404, u.t. 40 yrs., g.r. £15, r. £365 p.a. 4,000

By VAUGHAN & CO.

Finchley—17, Hendon-lane, u.t. 83 yrs., g.r. £10, r. £75 900
18, Cyprus-rd., u.t. 83 yrs., g.r. £8. 8s., r. £55 580
Hampstead-rd.—5 and 6, Little George-st., u.t. 21 yrs., g.r. £9. 9s. 310
Paddington—16, Sovereign-mews, u.t. 32 yrs., g.r. £4. 4s., r. £30 190

By A. & A. FIELD.

Lambeth—71 to 74, and 100 to 104, East-st., u.t. 11 yrs., g.r. £52. 10s. 280

By R. REID.

Notting-hill.—50, Clarendon-rd., u.t. 50 yrs., g.r., &c., £15 13s. 700
Russell-sq.—No. 52, u.t. 10 yrs., g.r. £30. 9s., r. £140 p.a. 450
41, Upper Bedford-pl. and stabling, u.t. 29 yrs., g.r. £24 920
4, University-st., u.t. 13 yrs., g.r. £7. 10s. 360
4 and 5, Mortimer-market, u.t. 13 yrs., g.r. £4. 10s. 315
Edgware-rd.—L.g.r. of £450, subject to a.r. of £270 p.a. for 4 years 500

[Contractions used in this list.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; yd. for yard, &c.]

MEETINGS.

SATURDAY, NOVEMBER 16.

University College, London (Archæology).—Demonstration at the South Kensington Museum. 7 p.m.

MONDAY, NOVEMBER 18.

Royal Institute of British Architects.—8 p.m.

Liverpool Architectural Society.—The President (Mr. T. Mellard Reade) will read a short paper on "The Structure of Sandstone as affecting Architectural and Engineering Works."

TUESDAY, NOVEMBER 19.

Institution of Civil Engineers.—Mr. J. J. Thornycroft on "Water-Tube Steam-Boilers for Marine Engines." 8 p.m.

University College, London.—Mr. Hugh Stannus on "The Distribution and Application of Ornament with Reference to Surface Material, Construction and Purpose," VI. 5 p.m.

Statistical Society.—Opening Address by the President, Dr. T. G. Balfour, F.R.S. 7.45 p.m.

Glasgow Architectural Association.—Mr. J. P. M'Gillivray on "Sculptor."

WEDNESDAY, NOVEMBER 20.

Society of Arts.—Opening Address by the Duke of Abercorn, C.B., Chairman of the Council.

University College, London (Archæology).—Professor R. S. Poole on "The Cairene House." 5 p.m.

British Archæological Association.—(1) Mr. C. H. Compton on "North Creake, Norfolk; its Abbey and Churches." (2) Mr. T. Morgan, on "The Rose of Provence and Lilies of France in a Vision of Lincoln." 8 p.m.

Royal Meteorological Society.—Seven papers to be read. 7 p.m.

THURSDAY, NOVEMBER 21.

Institution of Civil Engineers.—Students' Visit to the Thames Ironworks, Orchard-yard, Blackwall, E. 2 p.m.

University College, London (Archæology).—Demonstration at the British Museum. 5 p.m.

SATURDAY, NOVEMBER 23.

University College, London (Archæology).—Demonstration at South Kensington Museum. 7 p.m.

Miscellanea.

Festive Gatherings.—We are pleased to be able to record that a convenient mess-room for their men has been erected, at a cost of nearly 1,000*l.*, by Messrs. Thos. & W. Farmiloe at their works, Nine Elms. The architects were Messrs. Karslake & Mortimer, and the builder is Mr. Thos. Potterton, of Balham. On Saturday evening last the men in the employ of the Nine Elms branch of the firm, numbering about 100, sat down to a dinner to celebrate the opening of this useful hall. The chair was taken by Mr. T. Panaris, supported by Messrs. F. Pitts and J. Chard, and the firm was represented by Mr. Arthur Farmiloe. There were also present Mr. Karslake and Mr. Potterton. After dinner the chairman, on behalf of the employés, thanked the firm for the liberal provision made for their comfort, to enable them to provide themselves at a small cost with a good meal, also with a place to meet for social enjoyment. The health and prosperity of the firm was then proposed. Mr. Arthur Farmiloe made a suitable reply for the firm, and said they were highly pleased to see the mess-room so well appreciated, and hoped that it would tend to the social improvement and happiness of the employés.——The firm of Messrs. Killby & Gayford, builders, 87, Worship-street, erected a large stage at the works, 73, Great Tower-street, on Saturday last, for the benefit of their *employés* and friends to view the Lord Mayor's procession. After the show had passed by the workmen were invited to a substantial repast in the shape of a cold collation, Mr. Stamp, the manager of the firm, being in the chair. The toast of "The Firm" was received with loud cheers, and was responded to by Mr. Hadenham.

Commercial Failures.—According to *Kemp's Mercantile Gazette* the number of failures in England and Wales gazetted during the week ending Nov. 9 was seventy-seven. The number in the corresponding week of last year was 105, showing a decrease of twenty-eight, being a net decrease in 1889 to date of 259. In the building and timber trades the failures last week were twelve in number, as compared with twenty and six in the corresponding weeks of 1888 and 1887 respectively.

Association of Manchester Students of the Institution of Civil Engineers.—At the meeting of this Association, on the 6th inst., Mr. A. W. Lawson, Stud. I.C.E., read a paper on "The Sewerage, Paving, &c., of Private Streets, under the Public Health Act, 1875, Section 150."

The English Iron Trade.—The English iron market is once more in a state of morbid excitement, speculative influences having for the moment succeeded in, to some extent, disorganising legitimate business,—at least in Scotland and the north of England. That trade has not been completely paralysed is due to a genuine demand, the requirements of consumers being still as large as they have been for some time past, although they are alarmed by the vagaries of the market. Notwithstanding the prevailing excitement, the trade in pig-iron rests upon a sound basis, an evidence of which is the steady and heavy decrease in stocks. The principal rise has been in Cleveland pig-iron, No. 3, G.M.B., having gone up above 7s. during the week, it being impossible to gauge the exact advance. Cleveland warrants are over 4s. per ton higher than Glasgow warrants, which, however, have gained about 3s. 6d. on the week. Scotch makers' iron has also been put up again, the advance ranging from 1s. to 3s. per ton. Bessemer pig in the north-west is 4s. 6d. dearer, and on the east coast about 5s. The advance in Cleveland and Scotland has been reflected in the midland districts, while the Lancashire pig-iron trade has been unsettled. There has been almost a uniform rise of 10s. a ton in finished iron, following upon the rapid advance in pig metal, although in some districts prices have been raised only about 2s. 6d. to 5s. Business, on the whole, is less active. Steel, on the contrary, continues in very full demand, regardless of the further increase in rates of from 5s. to 10s. per ton. There is some sluggishness in ordering new vessels, the high prices which shipbuilders are obliged to ask acting as a check to business. There is no slackening in the activity of the engineering trades.—*Iron.*

Insanitary Houses in Shoreditch.—At the Worship-street, Police-court, on Wednesday, the National Temperance Land and Building Company, represented by their Secretary, of 21, Charterhouse-street, Holborn-circus, owners of the premises, 9, 10, and 11, Ann's-place, Boundary-street, Shoreditch, appeared to a summons for allowing a nuisance to exist on those premises, rendering them injurious to health and unfit for habitation. Mr. Temple Cooke, barrister, represented the Company, Mr Smith (Rollit & Sons), for the prosecution, said that the state of the premises was such that the walls were damp with rain coming from the roof, rats were running all over the place, the water-closets were without a water-supply. The rooms were so small that often a man with his hat on could not stand upright. Evidence having been given by the tenants in support of the complaint, Mr. Alexander, Sanitary Inspector, said the premises were insanitary, and, in his opinion, unfit for habitation, and nothing that could be done to them would make them so. He admitted in cross-examination that he had taken no proceedings. Asked why not, he said that the premises had already cost 537*l.* of public rates, and he thought it useless to spend more money on them. The magistrate, having viewed the premises, made an order to close them, prohibiting the use of them until they were certified as fit for human habitation by the Medical Officer of the parish.

The New Asylum and Hospital, Gartloch.—At a recent meeting of the City of Glasgow Board of Lunacy, the plans of Messrs. John Thomson and R. D. Sandilands, 121, West Regent-street, were accepted for the construction of a new asylum at Gartloch. The Board invited eight firms of architects in the city to submit designs for an asylum to accommodate 500 patients, and six of these complied with the request. After examination of the plans sent, the Board adjudged those by Messrs. Thomson & Sandilands the most suitable, and they were appointed architects of the buildings, which it is expected will cost about 70,000*l.* Messrs. H. & D. Barclay were awarded a premium of 100*l.*, and Mr. H. E. Clifford, 50*l.*, while the other three competing architects had a premium of 25*l.* each.

Johnson's Fire-Resisting Wire-Lathing.—In regard to a recent severe fire at Messrs. Crabtree & Sons' dyeworks, Ardwick, Manchester, it is stated that Johnson's patent fire-proof plaster ceiling stood the fire remarkably well. Captain Tozer, the Superintendent of the Manchester Fire Brigade, says that the ceiling was subjected to intense heat and streams of cold water for about an hour. We believe that this is the first serious fire in which these ceilings have been put to the test.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	7	0	0	7	15	0
Teak, E.I. ....load	12	0	0	14	0	0
Sequoia, U.S. ....foot cube	0	2	2	0	2	6
Ash, Canada ....load	3	0	0	4	5	0
Birch ,, ...,,	3	10	0	4	15	0
Elm ,, ...,,	2	0	0	3	10	0
Fir, Dantzic, &c. ....,,	2	10	0	4	10	0
Oak ,, ...,,	5	10	0	7	0	0
Canada ....,,	2	10	0	3	10	9
Pine, Canada red ....,,	3	0	0	5	5	0
,, yellow ....,,	4	10	0	5	10	0
Lath, Dantzic ....fathom	5	0	0	6	10	0
St. Petersburg ....log	2	15	0	4	5	0
Wainscot, Riga, &c. ....log	8	10	0	11	0	0
Deals, Finland, 2nd and 1st...std. 100	7	0	0	8	15	0
4th and 3rd.... ,,	7	0	0	9	0	0
Riga ....,,	11	0	0	14	0	0
St. Petersburg, 1st yellow	9	0	0	11	0	0
2nd ,, ...	6	10	0	10	0	0
,, white	8	0	0	16	0	0
Swedish	9	0	0	17	0	0
White Sea	16	0	0	26	0	0
Canada, Pine, 1st	11	0	0	17	10	0
,, ,, 2nd	6	0	0	10	10	0
,, ,, 3rd, &c.	9	0	0	11	0	0
,, Spruce, 1st	7	0	0	9	0	0
,, 3rd and 2nd	6	0	0	8	10	0
New Brunswick, &c.	6	0	0	17	0	0
Battens, all kinds						
Flooring Boards, sq., 1 in., prepared, First	0	11	0	0	14	0
Second	0	8	0	0	10	6
Other qualities	0	6	0	0	7	9
Cedar, Cuba ....foot	0	0	4½	0	0	5
Honduras, &c.	0	0	4½	0	0	4½
Mahogany, Cuba	0	0	5	0	0	6½
St. Domingo, cargo average	0	0	5	0	0	6½

TIMBER (*continued*).	£.	s.	d.	£.	s.	d.
Mahogany—						
Mexican, cargo average	0	0	4½	0	0	5½
Tobasco ,, ...	0	0	5½	0	0	6½
Honduras ,, ...	0	0	6½	0	0	6½
Box, Turkey ....ton	4	0	0	13	0	0
Rose, Rio	15	0	0	20	0	0
Bahia	14	0	0	18	0	0
Satin, St. Domingo ....foot	0	0	0	0	1	6
Porto Rico	0	0	0	0	1	3
Walnut, Italian	0	0	4½	0	0	6½
METALS.						
IRON—Bar, Welsh, in London	0	0	0	0	0	0
,, ,, at works in Wales ...	0	0	0	0	0	0
,, Staffordshire, in London ...	0	0	0	0	0	0
COPPER—						
British, cake and ingot.... ton	48	0	0	49	0	0
Best selected	51	0	0	53	0	0
Sheets, strong	59	0	0	0	0	0
Chili, bars	47	10	0	0	0	0
YELLOW METAL....lb.	0	0	5½	0	0	5½
LEAD—Pig, Spanish ....ton	13	5	0	0	0	0
English, com. brands....	13	10	0	13	13	6
TIN—Straits	97	10	0	98	0	0
Australian	98	0	0	0	0	0
English Ingots....	101	0	0	0	0	0
OILS.						
Linseed ....ton	21	0	0	21	2	6
Cocoanut, Cochin	26	10	0	27	0	0
Ceylon	22	0	0	23	10	0
Palm, Lagos	26	10	0	0	0	0
Rapeseed, English pale	31	10	0	0	0	0
,, brown	33	10	0	33	0	0
Cottonseed, refined	23	15	0	0	0	0
Tallow and Olaine	21	0	0	40	0	0
Lubricating, U.S.		5	10	0	6	10	0
,, refined		7	0	0	13	0	0
TAR—Stockholm ....barrel	1	6	0	0	0	0
Archangel	0	15	6	0	15	9

COMPETITION, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITION.

Nature of Work.	By whom Required.	Premium.	Designs to be delivered.	Page
Altering and Enlarging Asylum....	Dorset County Lunatic Asylum....	40*l.* and 20*l.*	Jan. 21st	i.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Road Materials....	Acton Local Board	*Official* '....	Nov. 19th	ii.
Roadmaking and Sewer Works	Plumstead Burial Bd.	H. H. Church	do.	ii.
New Church, Llandudno	.....	T. G. Williams	Nov. 20th	xii
Main Drainage Extension	West Ham Council	Lewis Angell....	Nov. 28th	ii.
Bothy and Tool Shed, Highbury Fields	London County Council	*Official*	do.	xii.
Well Sinking	Com. of Sewers....	do.	Nov. 29th	ii.
Alteration and Extension of Schools	Burton-on. Trent Sch.Bd.	R. Churchill	Nov. 30th	ii.
Vagrant Wards....	Amersham Union	*Official*	do.	ii.
New Well	East Grinstead Gas and Water Company	E. Easton & Co.	Dec. 3rd	ii.
Lodge and Store Buildings, Clissold Park ...	London County Council	*Official*	Dec. 9th	xii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Premium.	Applications to be in.	Page.
Surveyor	Lancaster Corporation	200*l.*	Nov. 21st	xvi.
Assistant Surveyor....	Birkdale Local Board...	2*l.* weekly	Not stated.	xvi.

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

ARKLEY (Middlesex).—For building two cottages in Arkley-lane, Arkley, near Barnet. Mr. Hubert A. Gregg, architect:—

James	£768 0 0
Miller	730 10 0
Worboys & Son....	694 0 0

BECKENHAM.—For the erection of a billiard-room, "Tamar," Wickham-road, Beckenham, under the direction of Mr. Parnacott, 156, Westminster-bridge-road:—

Kydd	£140 10 6
Astell	118 0 0
Kick (accepted)	101 0 0
Reed	99 0 0

BRISTOL.—For the restoration of meter shop, premises, Castle-green, Bristol. Mr. R. K. Leaker, architect. Quantities supplied by Messrs. Young & Brown:—

Cowlin....	£4,231 0 0
Humphreys	4,105 10 0
Forse	3,930 10 0
Stephens, Bastow, & Co. (accepted)	3,803 0 0

[All of Bristol.]

BRISTOL.—For a branch factory and manager's house at Kingswood, for Messrs. E. W. Ashley & Sons, wholesale boot and shoe manufacturers. Mr. Herbert J. Jones, architect, Bristol:—

Eastabrook & Sons	£1,640 0 0
W. Godfrey, Kingswood*	1,590 0 0
T. Hatherly, ...	1,563 0 0
E. Walters	1,547 10 0
Wm. Church....	1,530 0 0
G. Humphreys	1,475 0 0
J. Perrott	1,407 0 0
Thos. R. Lewis (accepted)	1,376 0 0

* Rest of Bristol.

BRISTOL.—For pulling down old and building new warehouse and offices, Broadmead, for Messrs. H. Ashman & Co. Mr. Herbert J. Jones, architect, Bristol:—

	A.	B.
W. Church	£2,540 0 0	... £2,500 0 0
J. Wilkins & Son	2,275 0 0	... 2,250 0 0
J. Bastow	2,200 0 0	... 2,200 0 0
Cowlin & Son	2,189 0 0	... 2,189 0 0
Eastabrook & Sons....	2,148 0 0	... 2,138 0 0
A. Krauss	2,077 0 0	... 2,077 0 0
G. Humphreys	2,075 0 0	... 1,939 0 0
E. Walters	2,074 11 10	... 1,995 0 0
J. Perkins	1,995 0 0	... 1,995 0 0
T. R. Lewis	2,000 0 0	... 1,965 0 0
E. & G. Howell	1,960 0 0	... 1,904 0 0
J. Perrott (accepted)	1,974 0 0	... 1,874 0 0

[All of Bristol.]

A. Gross amount of tenders.

B. Nett ditto after allowance for old materials.

CROMER.—For the erection of the Town-hall, for the Cromer Town-hall Company, Limited. Mr. George J. Skipper, architect, Norwich. Quantities by Mr. F. M. Skipper, surveyor:—

J. Downing....	£2,050 0 0
W. Chapman....	1,992 0 0
Bardell Bros....	1,900 0 0
G. E. Hawes	1,900 0 0
Jas. Bray	1,899 0 0
H. Lacey....	1,853 0 0
E. Mayer....	1,807 15 0
J. H. Blyth	1,800 0 0
Corle & Beech	1,856 0 0
E. Eastoe	1,832 0 0
Soldan Hipwell....	1,795 0 0
J. Newman....	1,733 15 0
J. Orlow	1,695 0 0
J. Youngs	1,599 0 0
Chapman & Son, Norwich (accepted)	1,450 0 0

DORKING.—For the erection of a new chapel at the Dorking Union Workhouse, for the Dorking Board of Guardians. Messrs. Bergman & Benison, architects, 18, Essex-street, Strand, W.C.:—

C. Parsons, Reigate....	£855 3 0
F. Walker, Leatherhead....	574 15 0
W. Goddard & Son, Dorking	573 0 0
C. Dudley, Dorking....	561 0 0
W. Esser, Dorking....	547 10 0
W. Hanson, Kingston-on-Thames	542 0 0
J. Pledge, Dorking (accepted)....	538 5 0

GRIMSBY.—For building the Clee Park Hotel, for Messrs. Hewitt Bros., Limited. Mr. R. W. Farebrother, architect, Grimsby:—

Smith & Lunn, Newark	£4,680 0 0
C. Baines, Newark	4,500 0 0
J. Crawshaw, Skegness	4,300 0 0
Walker & Cook, Grimsby	4,083 0 7
T. Wilkinson, Cleethorpes	4,010 9 9
F. Grant, Cleethorpes....	3,876 19 4
J. Guy, Grimsby	3,800 0 0
J. Chapman, Grimsby	3,798 0 0
H. Marrows, Grimsby....	3,787 0 0
T. Simimson, Grimsby	3,690 9 10
Thompson & Sons, Louth (accepted)	3,676 0 0
Hewins & Goodhand,* Grimsby	3,400 0 0

* Withdrawn.

GRIMSBY.—For building fishermen's home, for the North Sea Steam Trawling Company, Limited. Mr. R. W. Farebrother, architect, Grimsby:—

Thompson & Sons, Louth	£1,020 0 0
H. Marrows, Grimsby	1,007 13 0
Walker & Cook, Grimsby	1,002 8 2
T. Simimson, Grimsby....	999 5 0
J. Gray, Grimsby	999 0 0
J. Guy, Grimsby....	997 10 0
J. Chapman, Grimsby....	979 9 0
F. Grant, Cleethorpes	970 0 0
T. Wilkinson,* Cleethorpes	851 8 0

* Accepted.

LONDON.—For the erection and completion of the Royal South London Ophthalmic Hospital, St. George's-circus, Waterloo-road, for the Committee. Mr. Keith D. Young, architect:—

Hall, Beddall & Co.	£19,168 0 0
Patrick	18,979 0 0
Wall Bros.	18,863 0 0
Nightingale	18,831 0 0
Bywaters	18,816 0 0
Higgs & Hill	18,700 0 0
Downs	18,598 0 0

LONDON.—For erecting house, Fitzjohn's-avenue, Hampstead. Mr. George Truefitt, architect:—

Stuart	£6,000 0 0
Ham & Son	5,549 0 0
Lown & Son	5,470 0 0
Gould & Brand	5,377 0 0
Stanley Bird	5,253 0 0
Hunt	5,198 0 0
Bryans (accepted)	4,997 0 0

LONDON.—For building new warehouses, James-street, Haymarket, for Mr. W. F. Williams. Mr. D. Cubitt Nichols, architect:—

Patman & Fotheringham	£6,783 0 0
Perry	6,667 0 0
Morter....	6,567 0 0
Scrivener....	6,490 0 0
Stimpson....	6,420 0 0
Gentry....	6,390 5 0
Grover	6,363 0 0
Nightingale	6,337 0 0
Lawrence & Sons	6,260 0 0
Toms	5,983 0 0

LONDON.—For foundations and basement in Davies-street and South Molton-lane, for Messrs. Bolding & Sons. Messrs. Wimperis & Arber, architects:—

Oldrey....	£3,377 0 0
Falkner	3,375 0 0
Nightingale	3,298 0 0
Bywaters....	3,294 0 0
Higgs & Hill	3,240 0 0
Hall, Beddall, & Co.	3,240 0 0
Chapple	3,229 0 0
Perry	3,197 0 0
Bush & Sons	3,173 0 0
Kirk & Randall....	3,119 0 0
Lawrence & Sons	3,018 0 0
Johnson	2,990 0 0
Adamson....	2,988 0 0
Wall Bros....	2,749 0 0

LONDON.—For the proposed rebuilding of the "Blue Anchor" tavern, Bell-court, Fenchurch-street, E.C., for Mr. Godwin. Messrs. Treacher & Fisher, architects:—

Kirk & Randall....	£4,125 0 0
Nightingale	3,639 0 0
Lascelles....	3,567 0 0
Greenwood	3,520 0 0
Gentry....	3,494 0 0
Kilby & Gayford....	3,370 0 0

LONDON.—For proposed alterations and additions to the German Orphan Asylum, Norfolk-road, Dalston, for the Committee. Mr. E. A. Gruning, architect:—

Holland & Hannen	£3,960 0 0
Cells & Son	3,777 0 0
Nightingale	3,630 0 0
Clark & Bracey	3,596 0 0
Perry & Co.	3,582 0 0
Larter & Sons	3,523 0 0
Simpson & Sons	3,500 0 0

LONDON.—For partial rebuilding and alterations at the "Black Lion" Tavern, Bayswater-road. Mr. R. A. Lewcock, 68, Bishopsgate-street Within, architect:—

A. Davies	£3,669 0 0
Kynoch & Co....	3,274 0 0
Lascelles....	3,098 0 0
Hearn & Co.	2,997 0 0
J. E. Todd	2,989 0 0
J. Walker	2,890 0 0
Balaam Bros....	2,854 0 0
John Allen & Sons (accepted).....	2,850 0 0

LONDON.—For works at 82, Tottenham-court-road. Messrs. Purnise & Thorpe, architects, 60, Kentish-town-road :—

Auley	£2,497 0 0
Wall Bros.	2,477 0 0
Lamble	2,473 0 0
Scrivener & Co.	2,356 0 0
Voller	2,319 0 0
Toms	2,314 0 0
Gould & Brand (accepted)	2,246 0 0

LONDON.—For the erection of a new residence at Hampstead, for Dr. Pidcock. Mr. G. R. Tasker, architect, 3, Cumberland-place, Lloyd-square, W.C. :—

Ansell	£1,956 0 0
Watts	1,867 0 0
Lawrence & Son	1,854 0 0
J. T. Chappell	1,852 0 0
Gould & Brand (accepted)	1,838 0 0

LONDON.—For alterations to premises, No. 39, Red-cross-street, E.C., for Messrs. Capua & Co. Messrs. Edmeston & Gabriel, architects, No. 42, Old Broad street. Quantities supplied by Mr. Tasker :—

Killby & Gayford	£1,374 0 0
Croker	1,250 0 0
Scott	1,240 0 0
Smith & Son	1,232 0 0
Kynoch & Co.	1,228 0 0
Young & Lonsdale	1,169 0 0

LONDON.—For the construction of roadway and pipe-sewer in the proposed Bishop King's-road, Fulham, for the Trustees of Dr. Edwards and Bishop King's Charity. Mr. E. F. Roberts, architect and surveyor, 3, The Grove, Hammersmith :—

Foster & Dickson	£998 0 0
J. Garton	947 14 4
J. Ball	870 0 0
Pizzey	833 10 0
E. Wilson	811 0 0
G. H. Nash	799 0 0
F. Dupont	793 0 0
Garlick & Horton	711 0 0
W. H. Wheeler	677 0 0
W. G. Coat	676 0 0
Geo. Aldred	669 0 0
E. Wildman	653 0 0
J. Jackson	650 0 0
J. Clements	649 0 0
T. Adams	643 14 0
Tomes & Wimpey	636 0 0
E. Rogers	600 0 0
G. Bell	599 0 0
Nowell & Robson	595 0 0
S. Saunders	565 0 0
J. Mears (accepted)	533 0 0
R. Mayo	470 0 0

LONDON.—For the erection of a billiard-room, "The Ferns," Laurel-grove, Penge, under the direction of Mr. Parnacott, 156, Westminster-bridge-road :—

Reed (accepted)	£144 10 0

LONDON.—For works at "Niagara in London," York-street, Westminster. Mr. R. E. Tyler, architect, 71, Gower-street :—

Green	£427 0 0
Rhodes	415 0 0
Beasley	403 10 0
Gould & Brand (accepted)	373 0 0

LONDON, S.W.—For gasfitters' and pewterers' work to the "Latchmere" Hotel, Battersea park-road, S.W., for Messrs. Brown Bros. Mr. H. I. Newton, architect, 49, Victoria-street, Westminster, S.W. :—

Pewterers' Work.

Briggs, Mile End	£231 0 0
Sanders & Son, High Holborn	225 0 0
Buckley & Beach, Chelsea	197 0 0
Heath, Goswell-road (accepted)	185 0 0

Gasfitters' Work.

Buckley & Beach, Chelsea (accepted).

LONDON.—For alterations to premises, York-road, Lambeth, for Messrs. B. Chamberlain & Son :—

Young & Lonsdale, Herne Hill (accepted)	£105 0 0

LOWESTOFT.—For the erection of two dwelling-houses, on Grove Estate, for Mr. W. G. Bell. Mr. George J. Skipper, architect, Norwich :—

J. Welham (accepted)	£1,052 0 0

SEVENOAKS.—For alterations and additions at the Wesleyan Chapel, Sevenoaks, for the trustees. Mr. Thomas Potter, architect, Sevenoaks :—

Grubb	£305 0 0
Dartnell	296 0 0
Bevan	299 0 0
Wiltshire (accepted)	287 0 0

SEVENOAKS.—For alterations and additions to Wood Dene, Oakhill, Sevenoaks, for Mr. Sidney Thompson. Mr. Thomas Potter, architect, Sevenoaks :—

Dartnell	£325 0 0
Bevan	306 0 0
Wiltshire (accepted)	299 0 0

WEST HAM.—For alterations to the "British Lion" public-house, for Mr. Hutcheson. Mr. T. W. Fletcher, architect :—

	Alterations.	Pewtering.
Burgess & Algar	£134 0 0	£31 10 0
Toole	132 0 0	30 0 0
Alexander	106 0 0	34 15 0
Robey	98 10 0	32 0 0

WORTHING.—For the erection of new premises at Worthing, Sussex, for the London and County Banking Company, Limited. Mr. W. Campbell Jones, architect, 52, Bedford-row :—

Morter	£5,067 0 0
Rider	4,988 0 0
Inkpen & Sons	4,924 0 0
Jas. Smith & Sons	4,837 0 0
Parsons	4,500 0 0
Chappell (accepted)	4,419 0 0

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TO CORRESPONDENTS.

F. R. W.—H. A. C. (we cannot afford space for the letter, which we do not think will assist the subject materially).—H. R. L.—W. H. C. (shall have attention).—W. & Co. (too late).—H. N. (too late).

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